. . AT THE MINING CONGRESS CONVENTION, MAY 17-21 . . .

See the
SULLIVAN
line of

Modern
COAL
CUTTERS

ORMING PART OF SULLIVAN'S $100,000.00 EXHIBIT IN NORTH HALL

CERTAINLY

I'M GOING TO ATTEND!

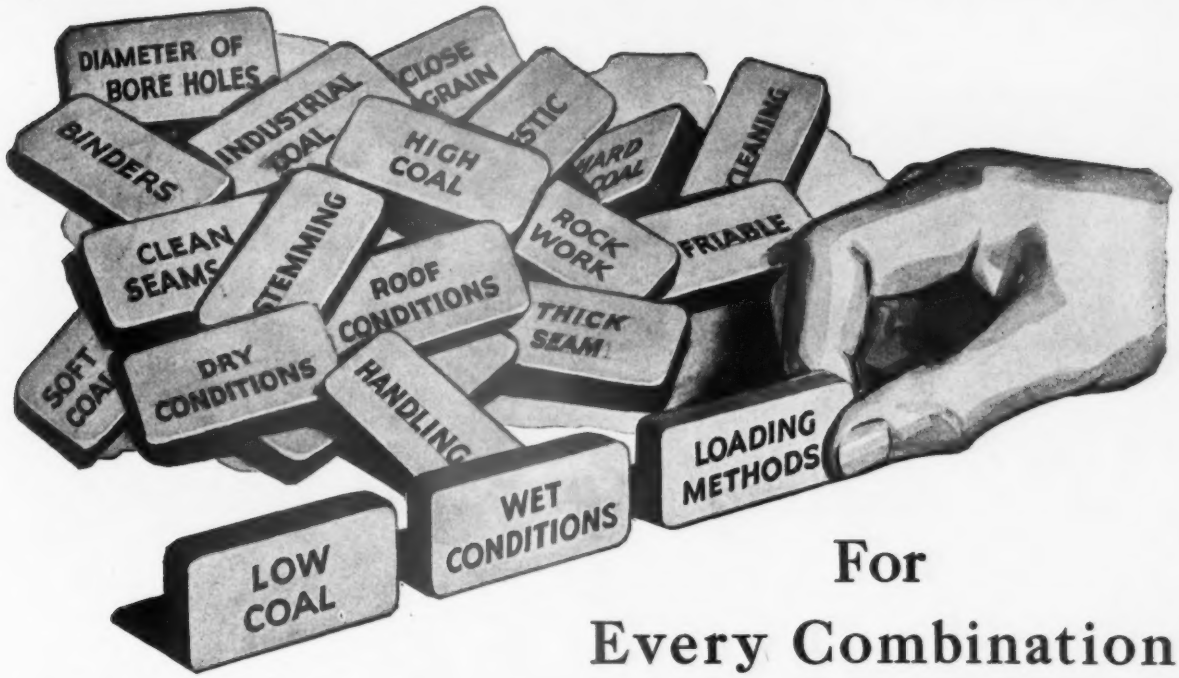
BECAUSE I KNOW that what I will see will be instructive—what I hear, educational—and who I meet, important. I represent the mining industry. I'm the fellow who exhibits—the operator who attends—the man with the purchasing authority. *Certainly* I'm going to attend the Fourteenth Annual Coal Convention and Exposition of the American Mining Congress at Cincinnati, May 17-21.

EVERY YEAR I notice improvements where such, the year before, seemed impossible. Maybe it's in the handling of exhibits . . . perhaps the papers presented are more interesting . . . or it might be along the entertainment lines.

IT'S TAKEN ME thirteen years to realize that each one of these Conventions and Expositions is better than before, and I hear on all sides that this year's meeting is going to be far ahead of all its predecessors. Certainly I'm going to attend—look for me again this year.

ANNUAL COAL CONVENTION & EXPOSITION

MAY 17-21 CINCINNATI, OHIO



For Every Combination

There's an **ATLAS PERMISSIBLE**

Different conditions demand different Permissibles—and for every combination of conditions, Atlas provides a permissible explosive.

Great diversity in coal structure, methods of mining and sizes of coal wanted at the tipple has led to great advances in the development of explosives equally diverse in action.

Does your need call for maximum spreading and shearing action? Atlas has the Permissible to provide it! Do you require a faster, shattering action? Atlas gives you the right action.

Atlas Permissible Explosives—Coalites, Apcol and Gelcoalites—have scientifically balanced properties to meet the problems of coal blasting. From high density and low velocity to high velocity and low density—there's a Coalite for every coal blasting need.

Let the Atlas representative give you the full facts about Permissibles that provide a controlled action for your particular conditions.

ATLAS POWDER COMPANY, WILMINGTON, DEL.

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Everything for Blasting

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EXPLOSIVES

CHEMICALS ATLAS EXPLOSIVES

The Mining Congress Journal

Julian D. Conover, Publisher
E. R. Coombes, Editor

James F. Callbreath — Glenn B. Southward
Albert W. Dickinson — Harry L. Moffett
B. E. Chambers

Vol. 23 MAY, 1937 Number 5

CONTENTS

	Page
EDITORIALS:	
Democracy and Majority Rule	45
Spending and Deficits	46
Collective Bargaining and the Wagner Act	46
The Importance of Knowledge	47
Freedom	47
Again . . . Coal Control	47
THE COAL INDUSTRY at CINCINNATI	48
THE IMPORTANCE OF THE CINCINNATI CONVENTIONS:	
C. E. Cowan	50
P. C. Thomas	57
Paul Weir	58
R. E. Salvati	59
C. M. Lingle	61
Eugene McAuliffe	67
Bruce G. Shotton	69
C. F. Hamilton	70
Ezra Van Horn	70
R. E. Taggart	71
CONVENTION PROGRAM	62
HANDLING LUBRICATING OILS UNDERGROUND By John M. Lindley	78
INSPECTION and SAFETY of THE ISLAND CREEK PROPERTIES By A. J. Bartlett	80
NEW REVERBERATORY FURNACE and WASTE HEAT BOILER INSTALLATION, PHELPS DODGE CORPORATION By H. A. Clark	82
WATER CONTROL and DISPOSAL AT PHELPS DODGE CORPORATION, Copper Queen Branch By Geo. B. Lyman	84
OXY-ACETYLENE WELDING PRACTICES in the METAL MINING INDUSTRY By H. R. Wess	89
A NEW EPOCH in COAL CUTTING BITS By E. P. Stenger	92
CIRCULAR SHAFT DRILLING at IDAHO MARYLAND MINE By J. B. Newsom	94
OF ALL THINGS	73
WHEELS OF GOVERNMENT	74
MECHANIZATION TRENDS	76
NEWS and VIEWS	96
PERSONALS	103
WITH THE MANUFACTURERS	105

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THE AMERICAN MINING CONGRESS
309 Munsey Bldg., Washington, D. C.

Howard I. Young, President — Edward B. Greene, Vice President
David D. Moffat, Vice President — Donald A. Callahan, Vice President
Julian D. Conover, Secretary

Westmoreland Mining Company, Blairsville, Pa. 80 Tons per Hour
The Berwind-White Coal Mining Co., St. Michael, Pa. 140 Tons per Hour
Pittsburgh Coal Co., Negley, Ohio 150 Tons per Hour
Bell & Zoller Coal & Mining Co., Zeigler, Ill. 240 Tons per Hour
Monroe Coal Mining Company, Revloc, Pa. 300 Tons per Hour
1936
Kingston-Pocahontas Coal Company, Hemphill, W. Va. 150 Tons per Hour
RS AND COMPANY
Union Colliery Company, Dowell, Ill. 80 Tons per Hour
Heisley Coal Company, Nanty Glo, Pa. 350 Tons per Hour
Island Creek Coal Co., Holden, W. Va. 160 Tons per Hour

Through **THIRTY-THREE** years of continuous service, the primary interest of **R and S** has been the development of better methods of coal preparation with least cost to the operator . . . maximum efficiency and recovery . . . better systems for preparing coal for today's highly competitive market.

The **STUMP AIR-FLOW COAL CLEANER** is the simplest, cheapest and most compact air-cleaner ever designed. Its effectiveness has been demonstrated under all conditions of service. In combination with the **MENZIES HYDRO-SEPARATOR** an ideal low-cost wet and dry preparation plant is assured.

For large tonnages and efficiency use our **WUENSCH** cone process.

Our consulting service, testing plant and laboratory are available without obligation to you. Talk it over with us at

BOOTH 438, COAL SHOW
Cincinnati, Ohio, May 17-21

Exclusive distributors for Wilmot Menzies Hydro-Separators, manufactured by Wilmot Engineering Co., Hazleton, Pa.

Roberts and Schaefer Co.
ENGINEERS and CONTRACTORS
1110 Wrigley Bldg. CHICAGO, ILL.
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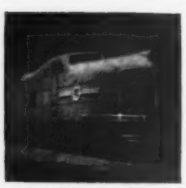
FOR FASTER OPERATING *and* MORE ECONOMICAL BELT CONVEYORS

Moving right along on TIMKEN Bearings. Link-Belt conveyor at No. 4 mine, Pond Creek Pocahontas Coal Company.

When the rolls are mounted on TIMKEN Bearings, belt conveyor idlers become belt conveyor hustlers. They increase belt speed, conserve power and save lubricant.

Timken-equipped conveyor idlers operate with the same smoothness and dependability in any kind of weather . . . underground or on top . . . inside or out . . . because the bearings are completely enclosed and protected against dirt and wet. The same bearing closures that keep the dirt out keep the lubricant in, so that lubricating attention is only required at extended intervals.



One of the new Union Pacific Streamliners operating on TIMKEN Bearings.

Belts can be safely loaded to capacity because TIMKEN Bearings are the master load carriers of the mines—radial loads, thrust loads or both together in any combination. Furthermore, belts never slide or drag when mounted on Timken-equipped idlers—which means that they last longer. Many of the most extensive and important belt conveyor installations ever made operate on TIMKEN Bearings. It will pay you to see that your conveyors are Timken-equipped.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.

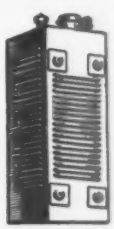
TIMKEN

TAPERED ROLLER BEARINGS

WE'VE GOT A JAM DOWN HERE

"WE'VE got a jam down here. Trolley wire came down right smack on a trip. No more trips for a while." A neat slice is cut out of production every time those words flash over a mine telephone. Mine locomotives powered with steel-alkaline batteries do away with dependence on dangerous overhead wires. Track bonding is eliminated. Construction is less costly.

But next to safety, the most profitable gain you make by using Edison Steel-Alkaline batteries is smooth, uninterrupted production. This rugged power source embodies a principle entirely different from any other battery. Its active materials are locked tight in steel containers. This prevents sudden failure...keeps Edisons "alive" 2 to 5 times longer than any other...keeps your mind off batteries.



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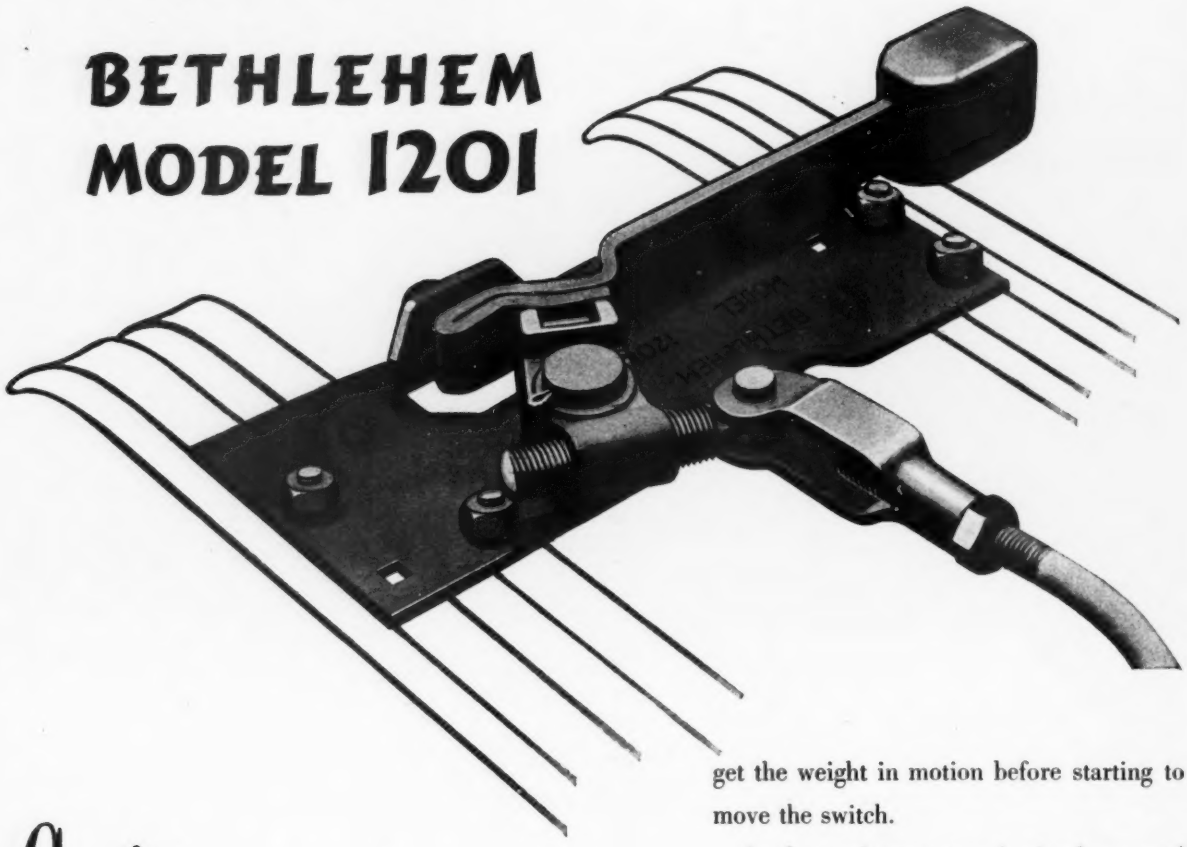
DIVISION OF THOMAS A. EDISON, INC., WEST ORANGE, N. J.

NEW!

BETHLEHEM MODEL 1201



Could you ask for more in a switch stand?

As for operation—Easy to throw and safe, with the weighted lever moving parallel to the track . . . A handhole grip in the weight and plenty of leverage . . . Mechanism on dead center when either point is closed, locking it securely and giving a chance to get the weight in motion before starting to move the switch.

As for maintenance—A simple rugged mechanism . . . Quickly and easily adjusted as to throw of either or both switch points . . . Only three moving parts, with no bolts, set screws or rivets whatsoever . . . A construction so simple that by removing a single cotter-pin the stand can be disassembled.

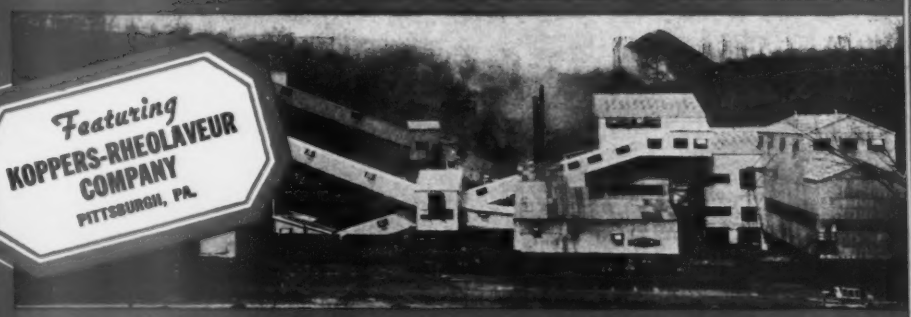
General characteristics—Low and compact—three inches high . . . Self-cleaning—no mechanism below tops of ties . . . Light in weight, yet with all the strength, leverage and throw for rail weights up to 30 and 40 pounds . . . Inexpensive . . . Can be furnished for an automatic switch if desired.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

Koppers-Rheolaveur equipped these 3 plants for one Company within 18 months—Starting with a 650-ton Koppers-Rheolaveur launder in its Champion No. 1 Preparation Plant (top, right), The Pittsburgh Coal Co. today relies upon Koppers-Rheolaveur equipment to handle efficiently more than 75 per cent of its total cleaning capacity. Both Champion No. 4 plant (center), and Champion No. 5 (bottom) of this company were Koppers-Rheolaveur equipped within 18 months of our first installation.

Koppers-Rheolaveur launders give a greater yield of coal in the larger sizes—efficiently wash fine coal to 0.01" size—permit full use of existing tipple or breaker—operate at unusually low cost—and open new markets with a preferred product.



Featuring
KOPPERS-RHEOLAVEUR COMPANY
PITTSBURGH, PA.

KOPPERS COMPANY

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PITTSBURGH, PA.

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KEARNY, N. J.

Visit the
KOPPERS DISPLAY
American Mining Congress
Cincinnati Convention
May 17-21

KOPPERS

serves the mining industry—again and again

Fast's self-aligning Couplings eliminate costly shut-downs for repairs or replacements—Photo shows a Fast's Coupling (400 HP at 300 RPM) on duty in a South American copper mine. Nearly 100,000 Fast's (made only by the Bartlett Hayward Division of Koppers Company) are transmitting several hundred million trouble-free horsepower for industries in all lands.

Creosoted timber (from the Wood Preserving Corporation) brings economies both above and below ground—Creosoted Fir beams for mine roadway (left) were framed and bored before treatment, saving much construction time. Creosoted ties in main heading track (right) have served without renewal since 1923. Untreated ties lasted only 3 years.

MCJ-5.

KOPPERS COMPANY, Pittsburgh, Pa.
Send me information on:

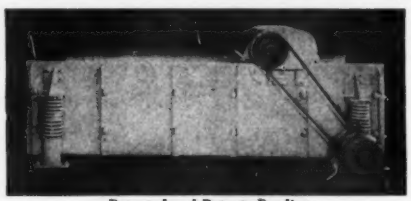
- ☐ Koppers Rheolaveur Process
- ☐ Menzie's Automatic Cone Separators
- ☐ Koppers-Llewellyn Automatic Washers
- ☐ K-R-M Dry-Cleaning Separators
- ☐ Coal Tipples
- ☐ Koppers-Birtley Dedusters
- ☐ Carpenter Centrifugal Dryers
- ☐ Boiler and Power Plants
- ☐ Mine Shops
- ☐ Fast's Couplings
- ☐ Pressure-treated ties, mine timbers, poles, posts, etc.
- ☐ Creosote-treated mine car floors, sides, lumber
- ☐ American Hammered Piston Rings
- ☐ Cylinder Packing
- ☐ Bronze and Iron Castings
- ☐ Flotation Oils
- ☐ Bituminous-base Paints
- ☐ Coal Tar Roofing
- ☐ Waterproofing
- ☐ Tarmac for paving

Your Name.....

Address.....

A NEW MOTION-

The new Robins Horizontal Screen has greater capacity yet requires less space, less headroom, less power. Its secret lies in its unique ELLIPTICAL MOTION, uniform throughout. This counterflow elliptic action propels the material forward, at the same time turning it over and over and giving each piece countless opportunities to pass through the mesh. Hence a close sized product. This new screen is strong and simple in construction and is made in all sizes for floor or suspended mounting. Find out more about it by mailing the coupon.



Patented and Patents Pending

The new Robins Horizontal, Elliptical Stroke Screen has proven its efficiency, economy and durability in one of the toughest places we could find. It is a worthy addition to the well known Robins Gyrex and Vibrex line of Vibrating Screens. Send for the descriptive folder.

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Robins plans and builds complete plants and makes Belt Conveyors, Bucket Elevators, Vibrating Screens, Screen Cloth, Feeders, Gates, Hoists, Grab Buckets and all their parts and accessories

Visit our Booths 338-340 at the Cincinnati Coal Show

ROBINS CONVEYING BELT COMPANY, 15 PARK ROW, NEW YORK, N. Y.

*Please send me bulletin describing*_____

*Name*_____

*Firm*_____

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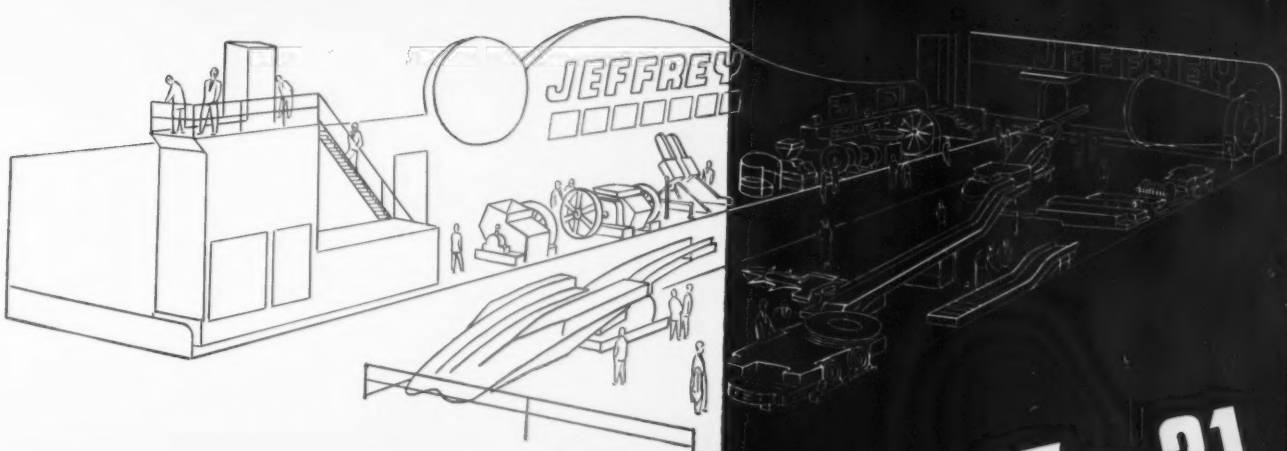
*City*_____ *State*_____ MJ

SEE HOW Jeffrey EQUIPS THE MINES ...at the Cincinnati Show

You Are Cordially Invited

to visit our exhibit at the 14th Annual Coal Mining Exposition of the American Mining Congress, in Cincinnati, May 17 to 21. There you will see aisles of modernized Jeffrey equipment for operations above and below ground . . . convincing evidence of a rounded-out mine plant service. Visit the Jeffrey "Little Theater" and see movies of this equipment operating at the mines. You will find us at our usual place, in the south wing of the Music Hall.

The JEFFREY MFG. Co.
COLUMBUS, OHIO



REMEMBER THE DATE

May 17 to 21

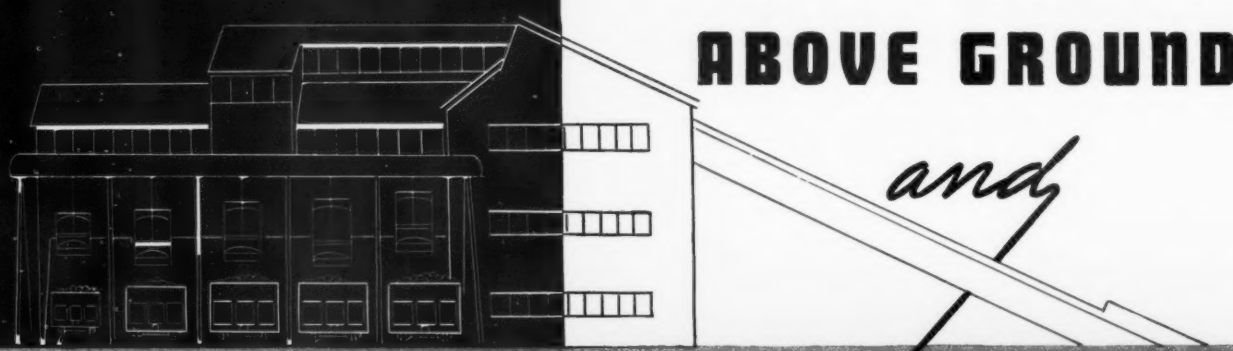
Jeffrey

1877 60 Years 1937

EQUIPS THE MINES

Below ground you find Jeffrey machines speeding up the various processes of mining and transportation. Above ground you see Jeffrey plants and equipment doing a thorough job of screening, crushing, washing and otherwise preparing or handling coal . . . Jeffrey fans sending fresh air into the workings . . . Jeffrey portable conveyors storing coal at the mines . . . Jeffrey conveying equipment handling coal and ashes at the power plant . . . yes, and Jeffrey conveyor systems unloading and loading coal at market destination.

Thus Jeffrey is prepared to serve the equipment needs of your mine plants in any and every major phase of operation, from working face to railroad car, and on beyond. Whether you use this Jeffrey equipment service in opening up a new mine, so as to gain the advantages of undivided responsibility . . . or in modernizing or adding to the production capacity of an existing plant . . . or in replacing only a single unit . . . you will be pleased with the result — PROFIT!

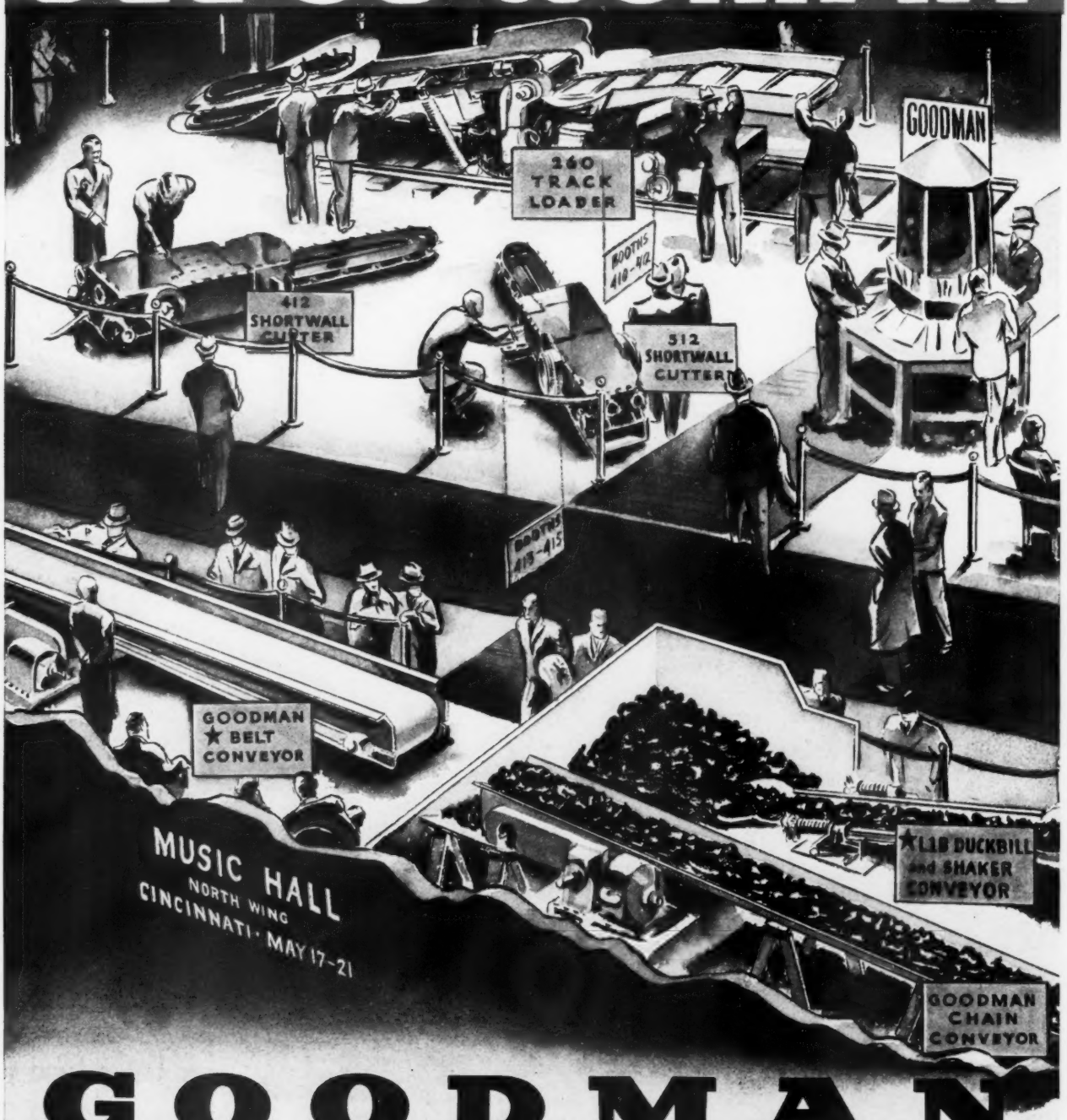


ABOVE GROUND *and* BELOW

FROM WORKING FACE TO RAILROAD CAR

THE LITTLE EXPOSITION

SEE US WORK AT



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MANUFACTURING COMPANY · HALSTED STREET AT 48th · CHICAGO

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THE COAL SHOW
FIRST PUBLIC SHOWING!
★ The 924 Low Vein Mounted Bottom Cutter
★ The 97-26 Belt Conveyor
★ The G12½ Shaker Drive
★ The 90S Elevating Conveyor
★ The L1B Duckbill Loading Head
These new Goodman machines will be on display and in operation at the Mining Congress Convention.
The following machines, built to the same high standards that have always characterized Goodman products, will also be on display:
91E12 Chain Conveyor
G12½ Shaker Conveyor Unit
412 Shortwall
260 Track Mounted Loader
512 Shortwall
We're looking forward to seeing you at the Mining Congress—Stop in and say "Hello".
BOOTHS 404-406
★ 924 LOW BOTTOM CUTTER
BOOTHS 400-402
BOOTHS 401-403
G12½ DRIVE ★
★ 90S ELEVATING CONVEYOR
ENTRANCE
NORTH WING
FIRST MEETING 10 O'CLOCK MONDAY MORNING
COAL SHOW

Be sure you're Right

THEN GO AHEAD!

● In selecting lubricants, the buyer has the choice of purchasing either an inferior product, thereby saving on the initial cost but taking the risk that the lubricant will perform "well enough," or purchasing a superior product and thus insuring proper performance with a minimum gamble.

Sometimes the purchase of lower-price products is justified. However, rather than take a chance why not call in a Pure Oil Industrial Engineer to survey your equipment and advise where you can use a lower-price product and when your best interests are served by purchasing the superior product. Let expert advice guide you in your choice. "Be sure you're right — then go ahead."

• • •

Comprising Pure Oil's Three Point Service is: 1. Selected Crude. 2. Skillful Refining and 3. Scientific Application.

THE PURE OIL CO.

U. S. A.

PRODUCERS, REFINERS, MARKETERS OF A COMPLETE LINE OF PETROLEUM PRODUCTS

Protect their feet

AS WELL AS THEIR HEADS . . .

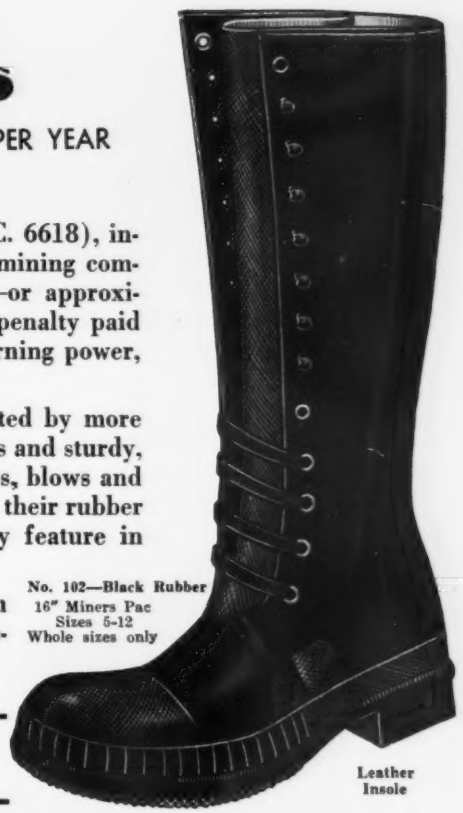
FOOT INJURIES

COST COAL COMPANIES MORE THAN $500,000 PER YEAR IN PENNSYLVANIA ALONE.

Statistics issued by the U. S. Bureau of Mines (Bulletin I. C. 6618), indicate that the actual cost of toe and foot injuries to coal mining companies in Pennsylvania is more than $500,000 per year—or approximately $3.00 for every man and boy employed. And the penalty paid by the victims of such injuries, in suffering and loss of earning power, is far more serious.

Much of this suffering and financial loss could be prevented by more extensive use of Lehigh Safety Shoes. Their steel toe boxes and sturdy, reinforced construction give effective protection against cuts, blows and burns that might otherwise cause serious foot injuries. And their rubber soles insulate electrical currents—a very important safety feature in most modern times.

Remember also that Lehigh Safety Shoes cost no more than other shoes of equal comfort and durability. Their protection is extra value—clear profit for all concerned.



No. 102—Black Rubber 16" Miners Pac Sizes 5-12 Whole sizes only

Leather Insole

INDUSTRY WORKS IN LEHIGH SAFETY SHOE

"REG. U. S. PAT. OFFICE"

No. X800
Black Retan Blucher, Army Grid. Sole, Oak Middle Sole, Rubber Heel, Sizes 5 to 13, Width EE.

Lehigh Safety Shoe Company, Inc.

ALLENTOWN PENNSYLVANIA

Gentlemen: I certainly would like to keep my men comfortable and safe in wet places. Please send me prices and complete information on your 16-in. Miners' Safety Pac No. 102. Also samples on approval as checked below.

☐ 12 pairs assorted sizes. ☐ 1 pair for personal use, size .....

Name .....

Position or Title.....

Company .....

Address .....

(All orders sent C.O.D. unless credit has been established)

For Maximum Safety And Convenience!

Western ProtectO Spool

ELECTRIC BLASTING CAPS

Mine operators invariably prefer to use Western ProtectO Spool Electric Blasting Caps because of the outstanding features that insure maximum safety and greater convenience in handling. Surely the following advantages fully justify your careful consideration, if you are not already using ProtectO Spool Electric Blasting Caps:

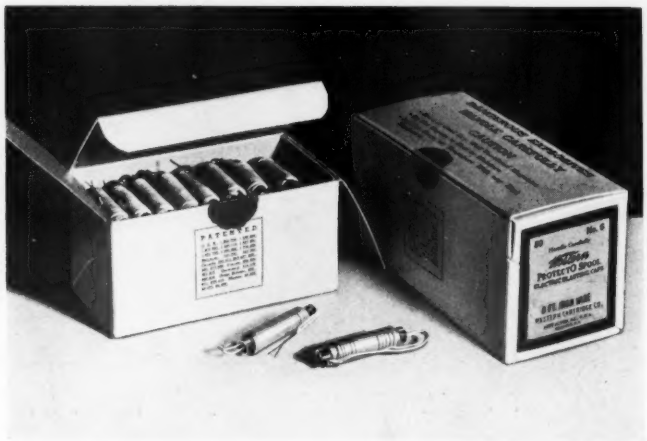
MAXIMUM SAFETY in handling and transportation, obtained by inserting detonator inside a heavy paper insulating spool, with leg wires wound around spool to prevent tangling. Tinned bare ends of leg wires are twisted together, thereby shorted, preventing explosions resulting from contact with charged mine rails, etc.

In withdrawing a cap from the carton others are not pulled out with it, to drop unnoticed and be stepped on by man or mule. Shot firer removes exact number of caps desired. The number used per shift is easily determined.

CONVENIENCE and extra safety in priming the shot is obtained by unspooling only enough leg wire to allow cap to be inserted in the dynamite primer when priming stick is being prepared. Later, when hole is being charged, balance of wire is allowed to run off the spool as primer is pushed into the hole with tamping stick.

Your inquiry for full particulars will receive prompt attention. *Simply address:*

WESTERN CARTRIDGE COMPANY
Dept. E-51, East Alton, Ill.



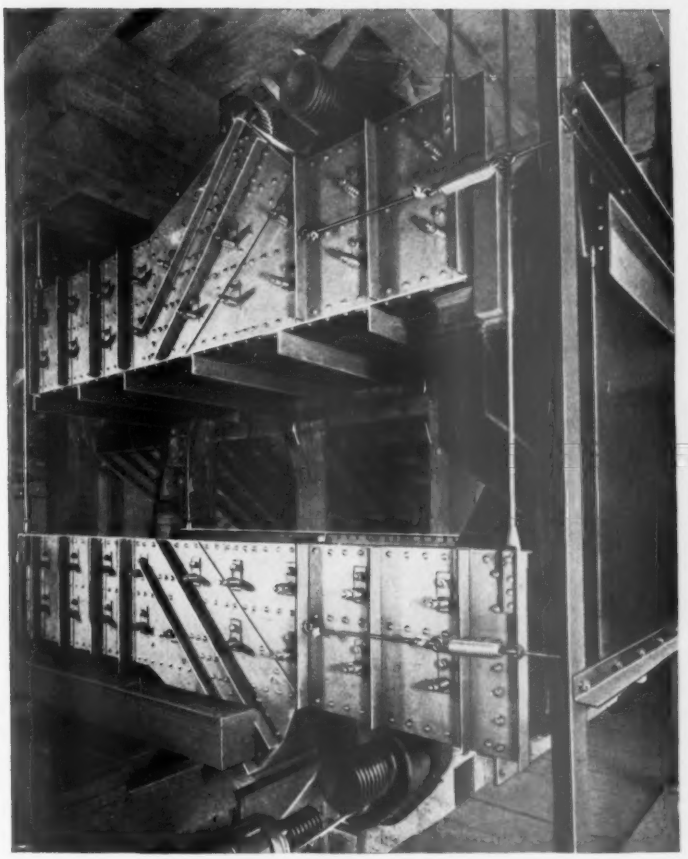
Western ProtectO Spool Electric Blasting Caps

Insulated Package, for Even Greater Safety

Western ProtectO Spool Electric Blasting Cap can be had in this *insulated* package, providing still greater safety. Complete cap assembly is enclosed in a strong, heavy paper tube, with a paper wad crimped into each end of the tube, entirely closing the package.

BLASTING CAPS . . . ELECTRIC BLASTING CAPS . . .
PROTECTO SPOOL ELECTRIC BLASTING CAPS . . .
PROTECTO LOOP ELECTRIC BLASTING CAPS . . .
SEISMOGRAPH ELECTRIC BLASTING CAPS . . . DELAY
ELECTRIC BLASTING CAPS . . . DELAY ELECTRIC IGNITERS

MORE COAL SIZED IN LESS SPACE ☆



Two 5' x 14' Double Deck, Heavy Duty, Low-Head Vibrating Screens Installed in a Coal Preparation Plant

☆

The new Allis-Chalmers Low-Head Horizontal Vibrating Screens give you greater screen area in less space . . . greater tonnage of accurate size coal at lower cost than older, slower moving type of screens.

Low-Head Screens, as the name suggests, take very little head room. They operate in a horizontal plane and can be installed one right under another as illustrated. This often saves expensive remodeling to obtain greater screen capacity.

Low-Head Screens are built with single, double or triple decks from 3' x 6' to 6' x 14' or larger. Allis-Chalmers coal screens are described in Bulletin 1476. Write for your copy. Or better still, see this screen in operation at the Coal Show, Booths 126 and 130.

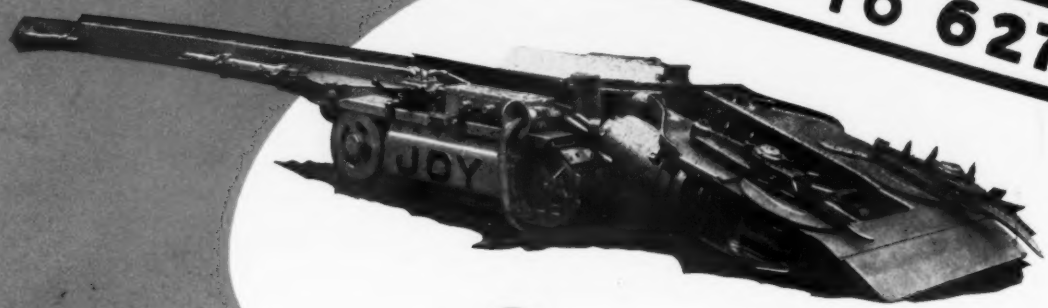
EQUIPMENT ENGINEERS TO INDUSTRY

ALLIS • CHALMERS

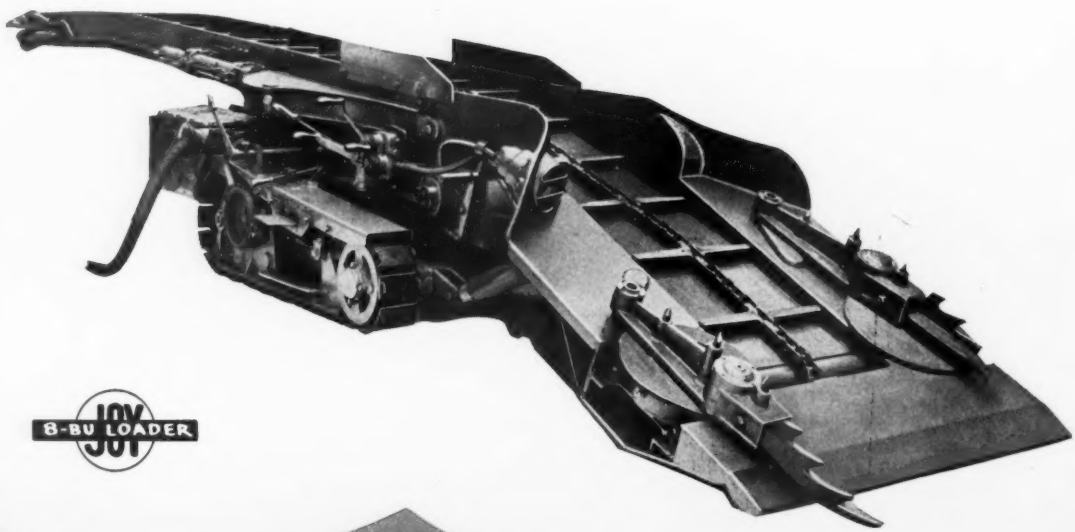
MILWAUKEE WISCONSIN

JOY EXHIBITS 4

SEE BOOTHS
FROM NUMBERS 418 TO 627



JOY JUNIOR

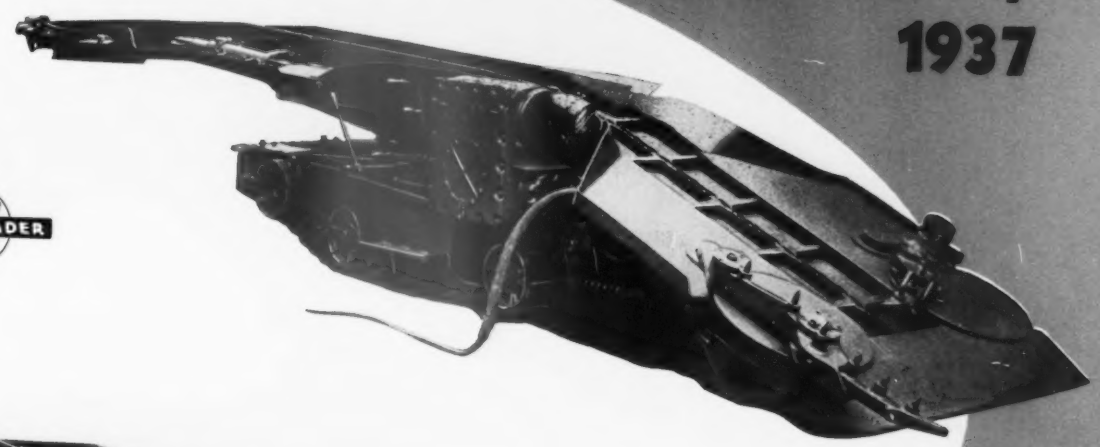


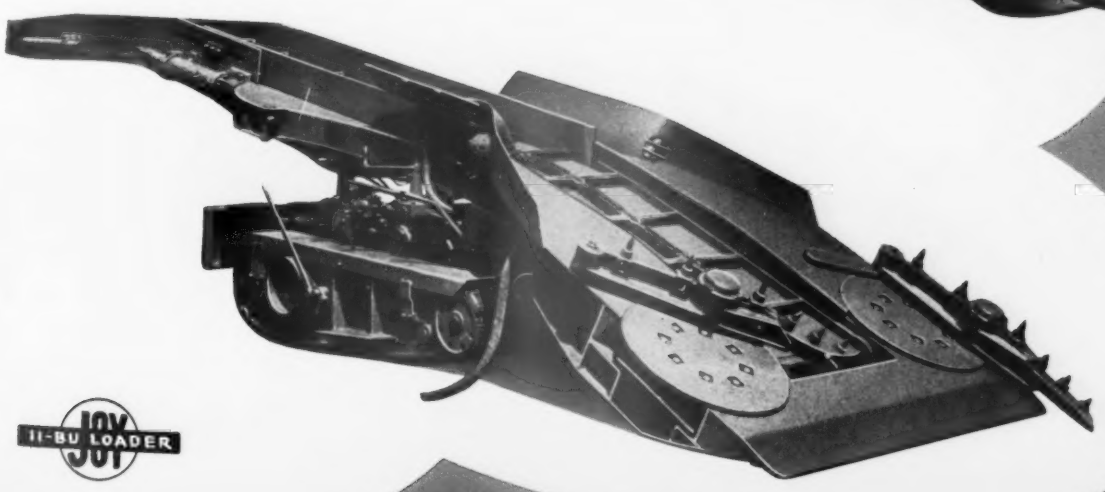
JOY 8-BU LOADER

JOY Manufacturing

POPULAR LOADERS
Also CHAIN *and* BELT CONVEYORS..

At CINCINNATI—
May 17th to 21st, 1937





Company — Franklin, Pa.

O-B will be at Spaces 430-434-436

May, 1937, signals another milestone in the forward march of modern mining methods. In keeping with the spirit of the annual convention will be the O-B exhibit - offering convention-goers the opportunity of examining the most advanced design and construction in overhead materials, rail bonds, locomotive equipment and safety and control devices. ... you and your organization ... at close range these pro...

This Bulldog Splicer offers smooth underrun to the Heavy Duty Mine Shoe and Harp

The Feeder cable is positively clamped with a twist of the wrench in the O-B Quick Break Switch

A 5-inch trolley wheel glides over a Type PC Frog - note the graphite lubricating insert

LIFE of O-B MATERIALS

Brings Users

EXTRA PROFITS

"Mills into Millions!" might well be an appropriate headline typifying O-B mine materials and equipment. For though there may be only a few pennies, or even a few mills, profit in the extra life of one O-B product, that small profit assumes tremendous proportions — and tremendous importance to the mine operator — when multiplied by the large number of such products that he purchases annually.

May, 1937 signals another milestone in the forward march of modern mining methods. In keeping with the spirit of the annual convention will be the O-B exhibit — offering convention-goers the opportunity of examining the most advanced design and construction in overhead materials, rail bonds, locomotive equipment and safety and control devices. We invite you and your organization to inspect at close range these products whose extra life and extra service play such an important part in increased production efficiency and lowered costs! (Booths 430, 434 and 436)

OHIO BRASS COMPANY

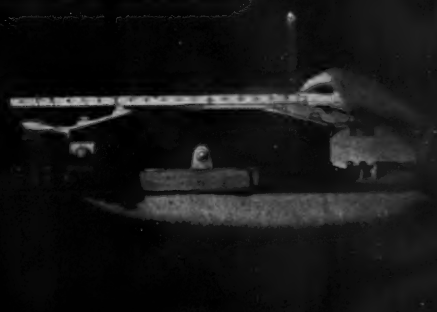
MANSFIELD, OHIO, U. S. A.

Canadian Ohio Brass Co., Ltd., Niagara Falls, Ont., Canada

1928M

O-B welding equipment with an AW-13 rail bond in the spotlight

A Bulldog Expansion Bolt, K-3 hanger, Bulldog Clamp and Fused Trolley Tap



Low headroom requirements are met by the set-back on this Metal Underrun Section Insulator

Sweeping the LUMP the NEW DU PONT

HAS NEAREST ACTION TO THAT OF BLACK OR PELLET POWDER

DU PONT LUMP COAL C is the most notable development of recent years in coal mining explosives. It meets a universal demand by approximating the slow heaving action of black or pellet powders. At the same time, it has all the safety features of any other approved permissible explosive.

Coal Mining Officials who would like to use a permissible explosive, but who have been reluctant to lose the advantages of black or pellet powder, will find the ideal solution of their problem in this new and better product of DU PONT research and service.

BRINGS DOWN BIG SOLID LUMPS FROM ANY BITUMINOUS SEAM

Approved by the Bureau of Mines early in 1936, DU PONT LUMP COAL C is already being used successfully in more than sixty bituminous coal mines located in Pennsylvania, West Virginia, Kentucky, Illinois, Missouri, Colorado, Montana, Wyoming, Alabama, Indiana and Virginia.

Careful analysis of the results achieved under these widely varied conditions indicates that LUMP COAL C can be relied upon to produce lump coal.

Specific data and instructions for successful use under any given conditions will be furnished promptly on request.

SPEEDS UP PRODUCTION AT MINIMUM COST PER TON

LUMP COAL C offers every facility for high production at minimum cost.

Class A fumes—users notice their superiority.

The wide variety of cartridge sizes permits correct length and strength of charge for any given requirement.

LUMP COAL C is now available with either 86, 88, 115, 118, or 157 cartridges per 50-lb. case; the sizes being 1¾" x 8", 2" x 6", 1¾" x 6", 1½" x 8", and 1½" x 6", respectively.

DU PONT
REG. U.S. PAT. OFF.

EXPLO and BLASTING

Coal Industry!

COAL C

PERMISSIBLE

Complete instructions regarding storage, handling, application of detonators, connection of electric wires, etc., are enclosed in every case.

SHEARS THE RIBS CLEAN

One of the most important and distinctive advantages of LUMP COAL C is its combination of a slow heaving with a strong spreading action. When the holes are properly located, "tight" or "hanging" shots are practically eliminated. The ribs from floor to roof are shot with minimum effort and expense.

IDEAL FOR MECHANICAL LOADING

The strong spreading action, which assures clean corners and straight ribs, also makes LUMP COAL C ideal for use with mechanical loaders. Elimination of "tight" or "hanging" shots eliminates hand picking and bar work—enabling the loader to get all of the coal without difficulty or delay.

VISIT OUR EXPLOSIVES ENGINEERS AT THE CINCINNATI COAL MINING EXPOSITION

Everybody attending the COAL MINING CONVENTION and EXPOSITION at Cincinnati, May 17-21, 1937, is cordially invited to come to Booths 125-127 of the SOUTH WING, MUSIC HALL to consult members of our technical staff concerning the use of explosives. They will be especially glad to give constructive suggestions regarding the use of LUMP COAL C in bituminous mines where there has been doubt or difficulty regarding the successful use of any permissible explosive. If unable to attend the Exposition, write for information regarding the application of LUMP COAL C to your mines.

E. I. DU PONT DE NEMOURS & CO., INC., EXPLOSIVES DEPARTMENT, WILMINGTON, DEL.

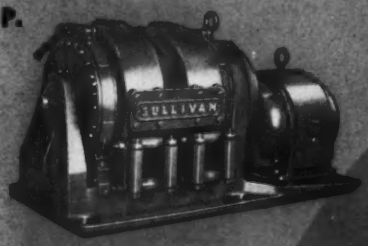
SIVES

ACCESSORIES

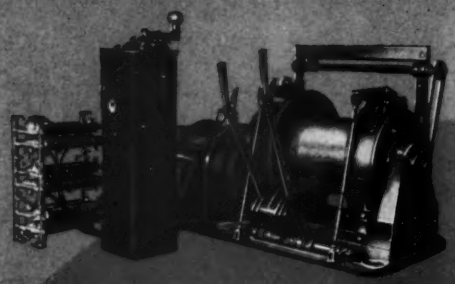
BOOTHS 125 AND 127
SOUTH WING, MUSIC HALL
MINING CONGRESS
EXPOSITION

189 TYPES AND SIZES

3 TO 150 H. P.
GASOLINE
ELECTRIC
DIESEL
AIR

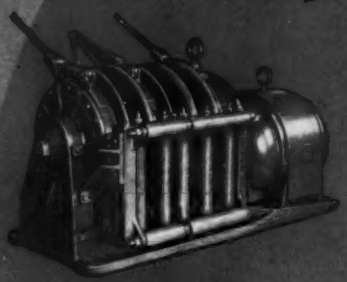


TWO DRUM SCRAPER HOISTS



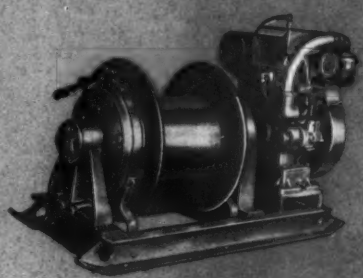
SHAFT, SLOPE AND SUPPLY HOIST

ROCK LOADER AND LOADER HOIST

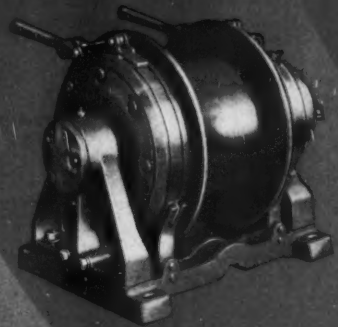


THREE DRUM SCRAPER HOISTS

SCRAPE
HAUL HOIST
PULL LOAD
LIFT

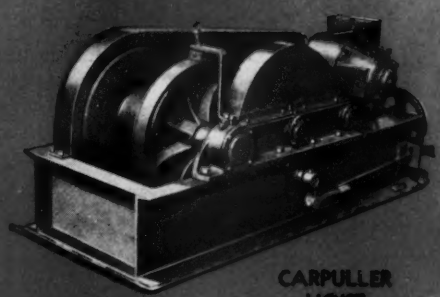


MULTI-PURPOSE GASOLINE HOIST

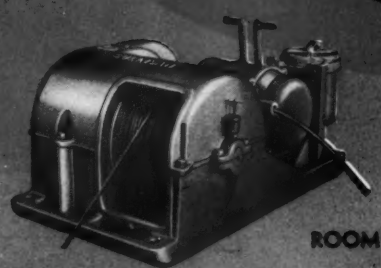


MULTI-PURPOSE ELECTRIC HOIST

MULTI-PURPOSE "TURBINAIR" HOIST



CARPULLER HOIST



ROOM HOIST

ULLIVANIZE O MODERNIZE

SULLIVAN • HOISTS •

BIRMINGHAM
BOSTON
BUTTE
CHICAGO
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DENVER
JOHANNESBURG
LONDON
MEXICO CITY
DUNDAS
SALT LAKE CITY
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SULLIVAN 'MCHY' CO.
327 NO. MICHIGAN AVE.
CHICAGO
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SCRANTON
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Roebling...
The pacemaker in
wire rope development
THE most exacting basis for judging wire rope performance is AVERAGE SERVICE.
This is the basis advocated by Roebling, in which rope cost per ton of material handled, or per other unit of service measurement, is based not on the service of a single rope but on the *average* service of several ropes.
John A. Roebling's Sons Co.,
Trenton New Jersey
TRADE MARK
JAR
REG. U.S. PAT. OFF.

WELCOME TO THE COAL SHOW

CINCINNATI • MAY • 17 • 21 • 1937

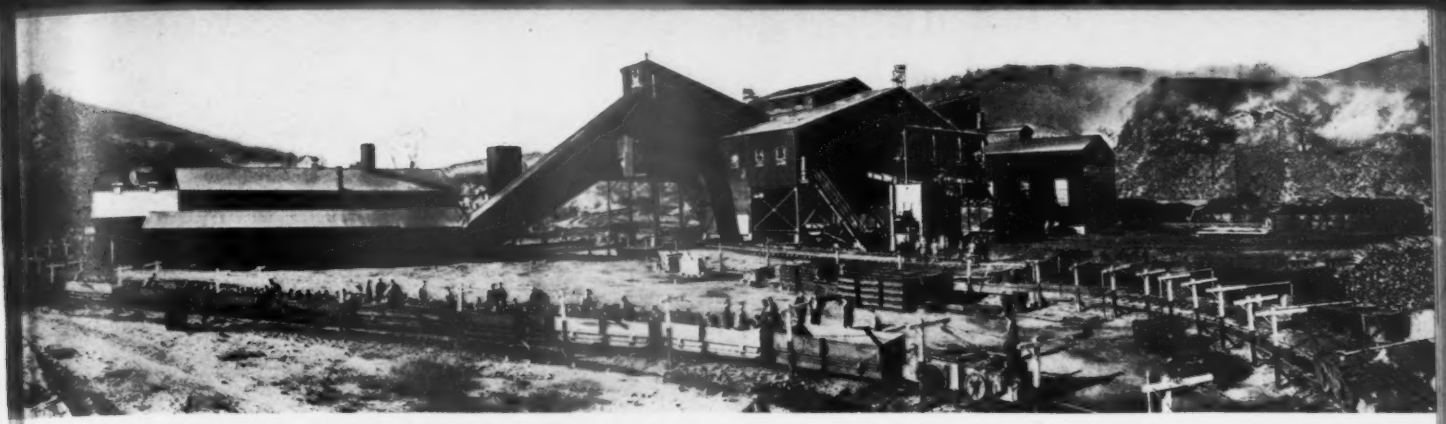
In inviting you to our booth, we do so not only as a company but as a group of associates who keenly appreciate the friendships of thousands of persons in the coal-mining industry.

When you visit us, we shall be glad to show you our latest developments in coal-mining explosives and blasting supplies.

Booth Lobby B

B-16

HERCULES POWDER COMPANY
INCORPORATED



HOW LINK-BELT SERVES THE COAL INDUSTRY

COAL CLEANING

The Link-Belt Simon-Carves coal washing system provides a new efficiency in coal cleaning for American mines. Since its introduction in the United States by Link-Belt, in 1928, its adoption by American operators has been rapid; 43 washing units having been built or now under contract, for service in practically every coal field in the United States. Over 334 units have been built for world-wide service.

COAL TIPPLES

Link-Belt's experience in coal preparation work extends back a good many years and embraces many large and small tipples as well as remodeling and modernization projects. No job is too large or too small for us to handle.

DRYING

63 installations in Europe, Canada, and Japan have proved the outstanding efficiency of the unique Roto-Louvre dryer, now made in the United States by Link-Belt. Several installations recently made in American mines are likewise showing excellent results in the thorough and uniform drying of coal.

PICKING

Picking tables of various types, for every size plant and to suit all conditions. The Link-Belt reciprocating-type picking table is a modern development of Link-Belt engineers. It assures maximum efficiency, permitting easy removal of heavy refuse over the sides.

SIZING

Link-Belt makes a type and size of screen for any requirement. The line includes rigid hanger, flexible hanger, roller support and bar shaking screens, as well as vibrating, rotary disc grizzly and cylindrical revolving screens.

DEDUSTING

The Link-Belt dust extractor has solved the difficulties previously encountered in this service, viz.: incomplete extraction, inability to remove very fine dust, and inability to deal with damp coal owing to choking of air screened apertures. Another outstanding feature of this unit is that it extracts the dust without any breakage of the over-size material.

CRUSHING

Link-Belt furnishes crushers for all purposes — in the single roll, two-roll, breaker and mill types.

DUMPING

Link-Belt rotary dumps allow the use of solid, box-type mine cars. The cars are handled without shock and without need of uncoupling. There is less breakage of coal, less dust, less maintenance, less danger of wrecks. They are furnished electrically or gravity operated.

BLENDING

Many mines have certain sections of coal which must be blended with others in the same mine to make the poorer coal salable and allow mining operations to be conducted on the most efficient basis. Link-Belt has had considerable experience in the application of mechanical handling equipment to coal blending work.

MEET US AT THE

COAL SHOW

CINCINNATI

MAY 17-21

LOADING

The Link-Belt re-screening loading boom is a modern development which automatically removes any degradation fines from sized coal before delivery to railroad cars or motor trucks. Only clean, sized, picked coal is loaded. It can also handle run-of-mine coal when desired, loading all of it into the car or truck.

STRIPPING

The Link-Belt Speed-o-Matic shovel-dragline has greatly increased efficiency and reduced costs by speeding up the work of stripping overburden and loading coal. It is made in sizes up to 3 cu. yd. capacity.

UNDERGROUND HAULAGE

A recent development is the Link-Belt self-guiding belt conveyor system for low-cost, long distance haulage underground. It is ideally suited for use in shallow seams of coal, as low as 26" and on uneven floor surfaces such as usually prevail in the mine.

CONVEYING-POWER TRANSMISSION

Link-Belt manufactures complete, in its own shops, every type of conveying and power transmission unit entering into its complete engineering installations.

WEIGHING

Weigh boxes and chutes — electrically or counter-balance operated to suit all conditions.

LINK-BELT COMPANY, 300 West Pershing Road, Chicago

Philadelphia Pittsburgh Wilkes-Barre Huntington, W. Va. St. Louis Kansas City, Mo. Denver Seattle Toronto

Get your copy of this book at Cincinnati
OAL CUTTERS
SU NIZE
M ZE

Operators are cordially welcome at Sullivan's $100,000 Exhibit of Mining Equipment featuring nine Modern Coal Cutters . . . . . Cincinnati, May 17th to 21st

SULLIVAN MACHINERY COMPANY

Can your circuits stand prosperity?

Don't let cable failure hazard your output. Modernize before an expensive breakdown occurs

EVERY day, neglected electric circuits collect their toll from the mining industry. A cable fails or shorts. Production is held up. An expensive wait occurs. Dollars are lost minute by minute until repairs are made.

To the mining industry, Anaconda offers a service that may save you many dollars. With the aid of our comprehensive check-up plan, it is a simple matter to have your power layout diagnosed. Such a check-up will cost you nothing. Your electrical engineer or electrical contractor can make it, using the information which we will supply.

As the first step to bringing your property to 100% electrical efficiency, send for the two books below. They tell you how to make a check-up. If you have a specific problem in mind, consult with our Engineering Department. We will cooperate without obligation. 37637M

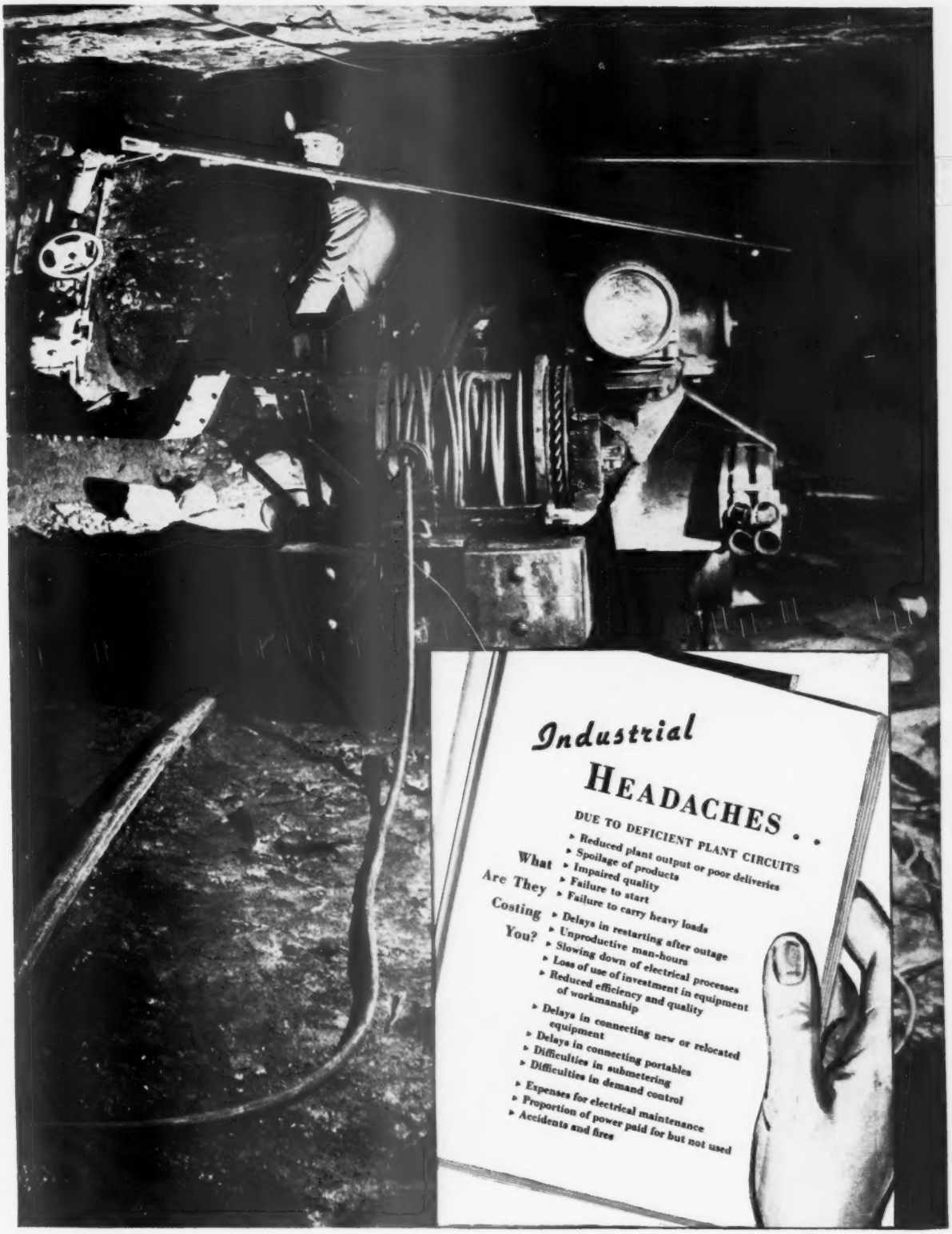
TWO IMPORTANT BOOKS WHICH YOU SHOULD HAVE

One is our "Industrial Wiring Survey". This volume tells you how to initiate a scientific check-up of electric circuits. It simplifies the problem surprisingly.

The other is our "Industrial Guide for the Selection of Wire and Cable". Brand new, it is the only thing of its kind in the electrical industry. All of the more common situations are described and recommendations given for correct wiring solution. Write for these books today.

ANACONDA
from mine to consumer

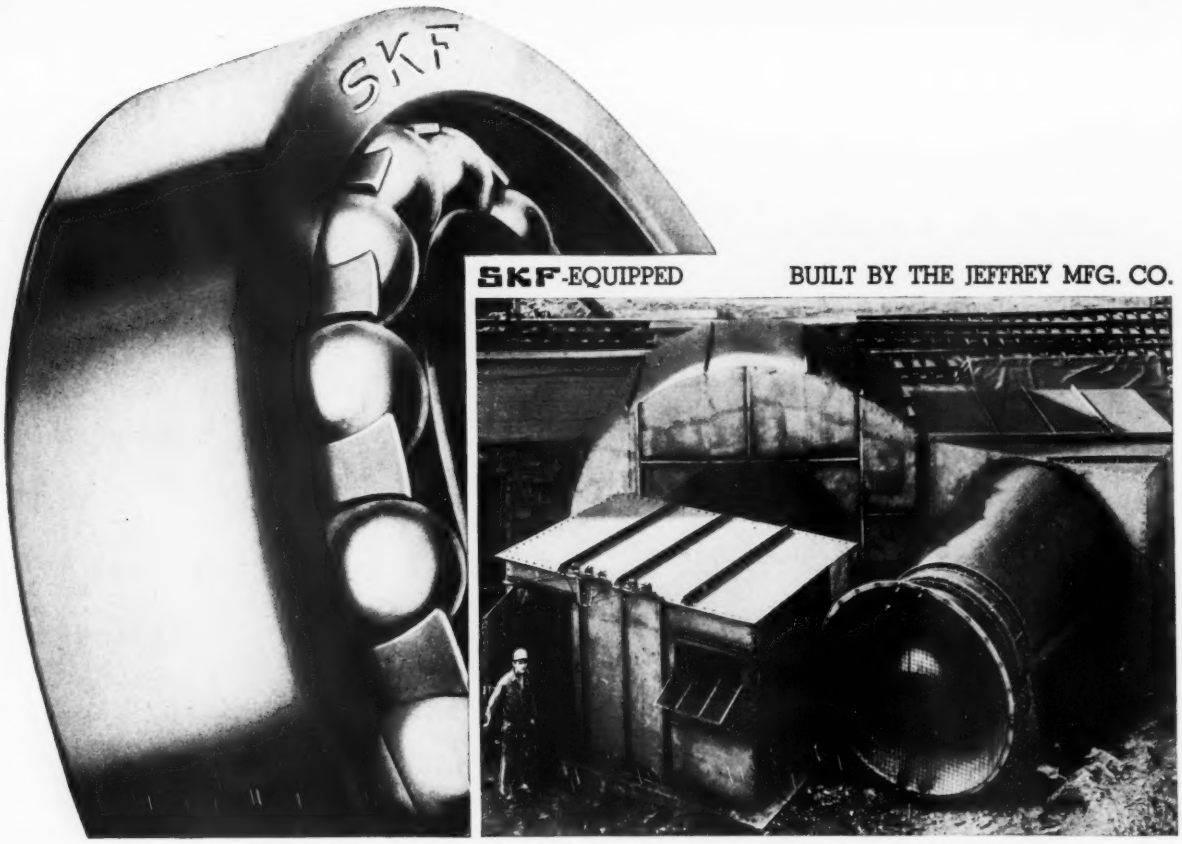
Anaconda Wire & Cable


Industrial
HEADACHES . .
DUE TO DEFICIENT PLANT CIRCUITS
What Are They Costing You?
▸ Reduced plant output or poor deliveries
▸ Spoilage of products
▸ Impaired quality
▸ Failure to start
▸ Failure to carry heavy loads
▸ Delays in restarting after outage
▸ Unproductive man-hours
▸ Slowing down of electrical processes
▸ Loss of use of investment in equipment
▸ Reduced efficiency and quality of workmanship
▸ Delays in connecting new or relocated equipment
▸ Delays in connecting portables
▸ Difficulties in submetering
▸ Difficulties in demand control
▸ Expenses for electrical maintenance
▸ Proportion of power paid for but not used
▸ Accidents and fires

Whatever your wiring problem, this "Guide" will help you find the right solution. Send for your copy today.

Company

GENERAL OFFICES: 25 BROADWAY, NEW YORK
CHICAGO OFFICE: 20 NORTH WACKER DRIVE
Sales Offices in Principal Cities



SKF-EQUIPPED BUILT BY THE JEFFREY MFG. CO.

NEW—THE JEFFREY AERODYNE FAN

it rolls dependably on SKF *Bearings*

Here's the Jeffrey Aerodyne high performance propeller fan especially designed for mine ventilation... that possesses "the advantages of the propeller type fan with an efficiency higher than that of a centrifugal fan."

In designing it, Jeffrey didn't temporize with bearings. They selected the same make of bearings and pillow blocks they have been using for years, for they know from experience that minimum maintenance combined with stamina, reliability and low operating costs make SKF a good investment on any machine anywhere.

MORE THAN
1200
TYPES AND SIZES
Industry comes to SKF for unbiased bearing counsel because SKF makes practically all types of anti-friction bearings.

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA., PA.

3781

SKF

BALL AND ROLLER BEARINGS

TOUGH JOBS WANTED IN YOUR MINE FOR G-E D-C MOTORS

"WE HARDLY TOUCH OUR G-E MOTORS. WE JUST LET 'EM RUN."

G-E DIRECT-CURRENT MOTORS are well suited for tough mine jobs. They do not require much attention except occasional lubrication. Otherwise, they can be counted on to stay on the job day in and day out, year after year, with only periodic inspection and servicing.

Furthermore, there are all kinds of jobs they can do, from the mine face to the railroad car. This variety of applications and the low maintenance expense help in reducing the cost per ton of coal or ore handled. Note the features listed that assure their giving efficient, reliable service.

Call the nearest G-E representative for further information about direct-current motors and also ask him about induction motors, synchronous motors, cable, control, mining locomotives, switchgear, power rectifiers, transformers, substation apparatus, and lighting equipment, for use in coal and metal mines. General Electric, Schenectady, N. Y.

Check These Applications for G-E Direct-current Motors in Your Mines

Ventilating fans	Hoists	Rock-dusting machines
Drainage pumps	Loaders	Gathering pumps
Shaker screens	Crushers	Car dumpers
Conveyors	Compressors	Locomotive blowers

G-E D-C MOTORS WILL GIVE

Long Life, because of

Correct bearing alignment
Correctly located brushes
Coils treated to resist corrosion
Commutating poles on all models

Easy Maintenance, because of

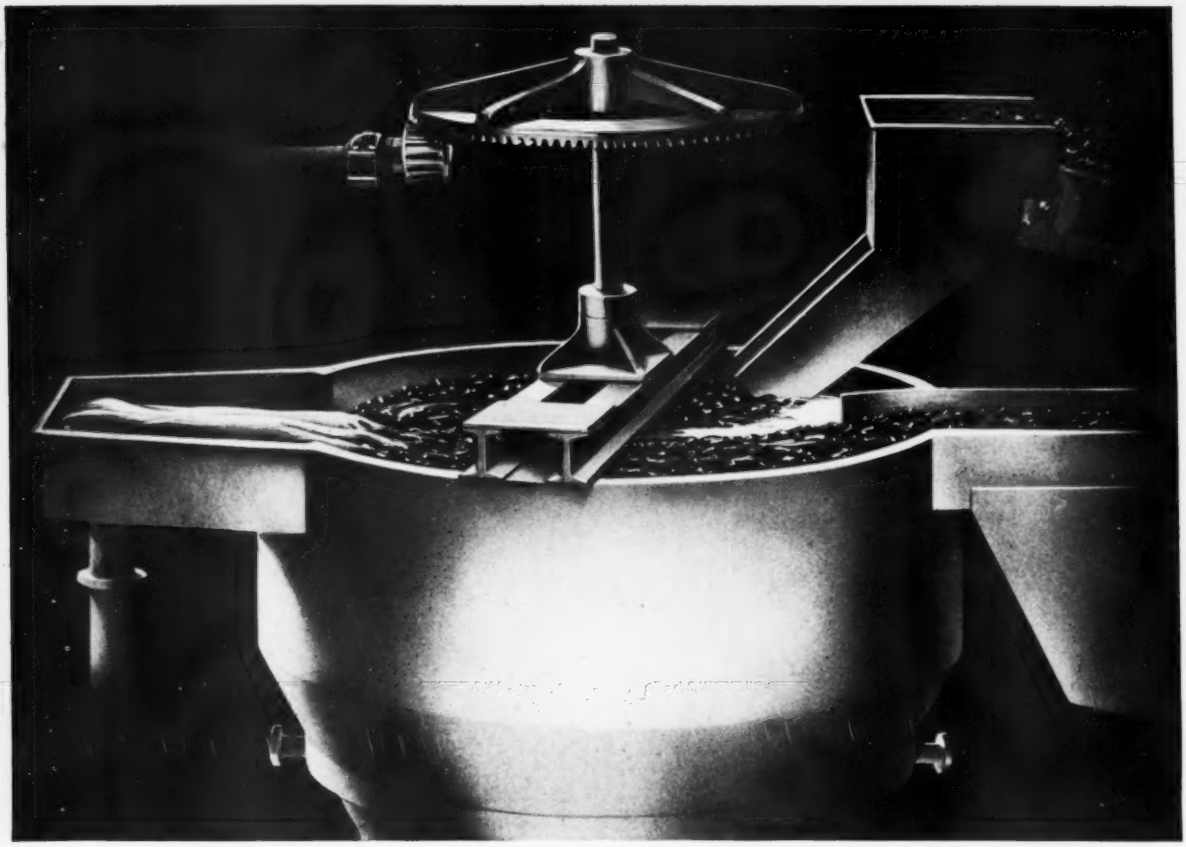
Accessible brush rigging
No tools required to inspect oil rings
Lubricant can be drained without removing end shield

Low Maintenance, because of

Highly effective insulation
Noncorrodible brush holders
Brush yokes that stay in position
Built-up commutator with refillable segments

008-31

GENERAL ELECTRIC



See the CHANCE SAND FLOTATION PROCESS DEMONSTRATION at CINCINNATI

FOR CLEANING BITUMINOUS COAL

UNITED ENGINEERS WELCOMES YOU
to its EXHIBIT at the
AMERICAN MINING CONGRESS
CINCINNATI—MAY 17-22
SPACE 327

UNITED ENGINEERS & CONSTRUCTORS INC

LOS ANGELES CHICAGO BUENOS AIRES PHILADELPHIA NEW YORK BOSTON RIO de JANEIRO

MAXIMUM RETURN TO CLIENTS PER DOLLAR EXPENDED

Come to

CINCINNATI

and see

The mine car which gives the maximum attainable capacity for any given over-all dimensions and costs less per cubic foot of capacity than any other design. It's good for high coal, low coal,— your coal.

ENTERPRISE WHEEL & CAR CORP.

BRISTOL, VA.–TENN. **HUNTINGTON, W. VA.**

Booths 624-626-628 Cincinnati Show

"What has been your experience using batteries?"

VISITING COAL OPERATOR—"And what about batteries for mine locomotives in the case of a mechanized operation? What has your experience been?"

COMPANY PRESIDENT—"We use Exide-Ironclads entirely. We have found them to be most economical and dependable. They give long life and little trouble. We recently renewed two of them that had given us approximately six years of continuous service."

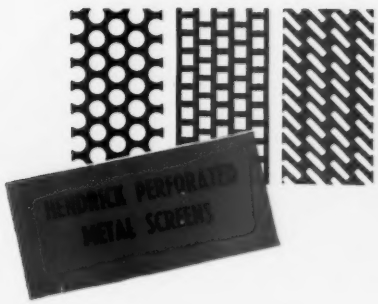
WITH the rapid growth of mechanized methods, mine haulage and batteries are matters of the utmost importance. Operators have learned that the performance characteristics of the Exide-Ironclad Battery are of special advantage in mechanized mines—one reason why this battery has earned an overwhelming preference in the industry. Write for free booklet, "The Storage Battery Locomotive for Underground Haulage."

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

Exide
IRONCLAD
BATTERIES
WITH EXIDE MIPOR SEPARATORS
"MIPOR," Reg. U. S. Pat. Off.

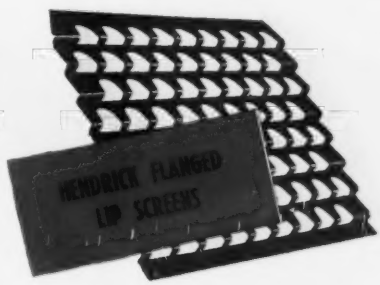
HENDRICK *products*

High standards of manufacture and consistently prompt service for over fifty years have established the complete line of Hendrick Products as the standard equipment for a legion of operators . . . your assurance of efficiency in mining operations.



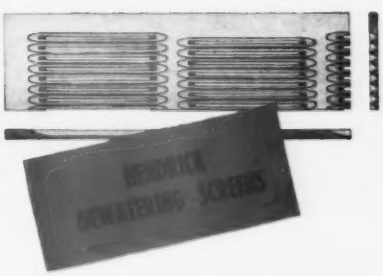
For the screening and sizing of anthracite and bituminous coal, coke, ores and other materials, Hendrick furnishes screens in steel, bronze, copper, Monel, stainless steel and other commercial metals. Round, square or slotted holes are available in all commercial sizes.

Available flat or corrugated, the staggered openings of this plate assure efficient screening and the full clearance through the perforations prevents blinding. The corrugations spread the material over the entire surface of the screen . . . features advantageous to greater production. It can be furnished with any size or shape of perforation.



An excellent screening medium for coal, coke, ores and other materials, Hendrick Flanged Lip Screens, in very small sizes, are also used for dewatering service. They are available in standard sizes, ranging from .010" x .025" x ½" (equiv. to 1/32" round) up to 11" x 11½" x 11¼" (equiv. to 12" round).

Every effort at Hendrick is exerted in the direction of building buckets to "stay on the line" for the longest possible period of service. Hendrick Buckets are doing their job well, as a long list of satisfied customers who are re-ordering them year after year will testify.



For dewatering small sizes of both anthracite and bituminous coal, Hendrick can furnish dewatering screens with various shapes such as milled slot; slotted perforations; tapered slots, with steps. They are available in a variety of slot widths to suit various conditions.

Hendrick has a complete line of testing equipment including the Hand Testing Screen, the Hendrick Screen, the Weston Testing Screen, and the Hand Testing Table—each with a definite purpose to fill. Complete details on any or all of this testing equipment will be furnished gladly.

Write FOR THIS BOOK

Illustrated book, informative and helpful for anybody concerned with perforated metals. A copy is yours for the asking.

SEE THE HENDRICK EXHIBIT AT BOOTH NO. 725

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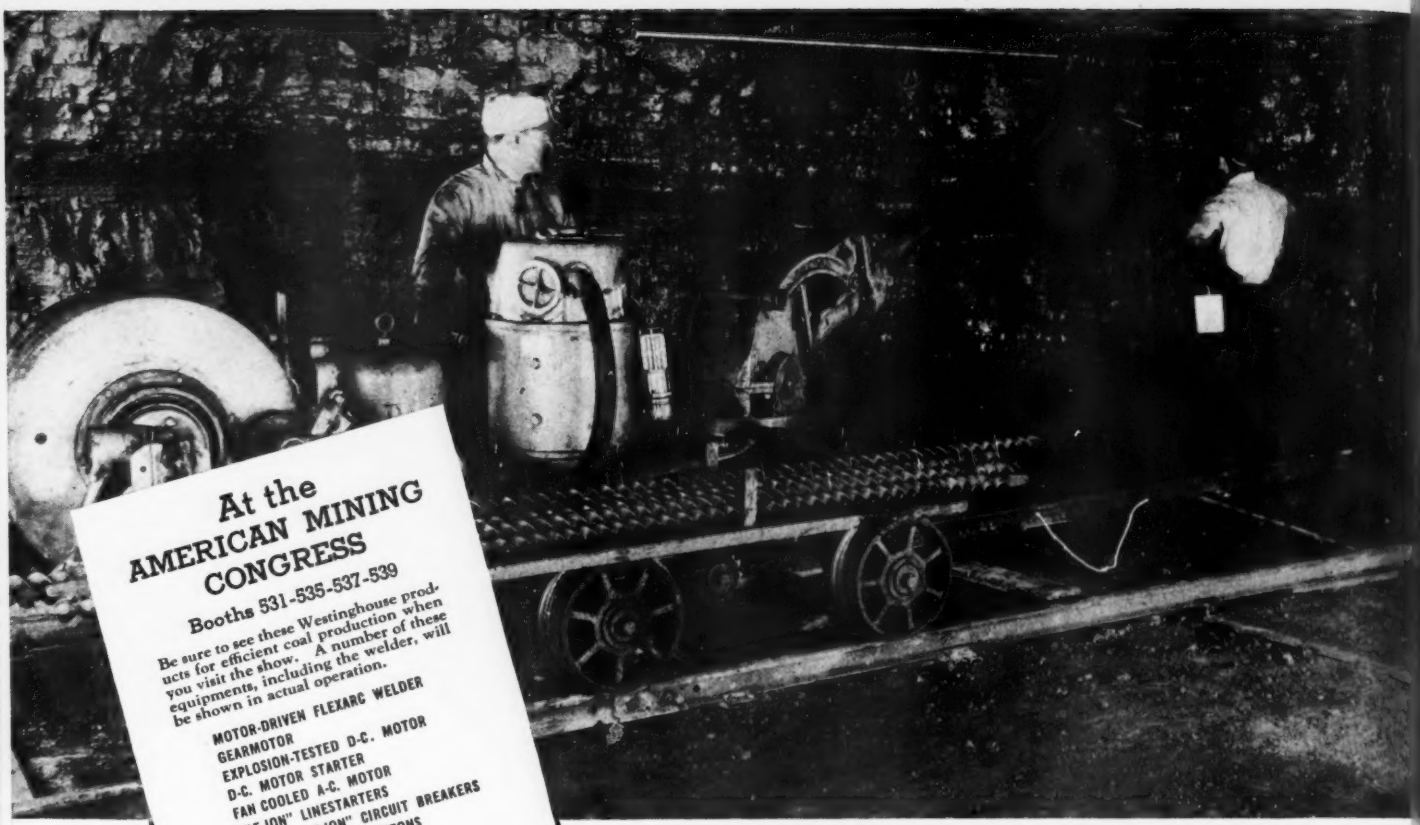

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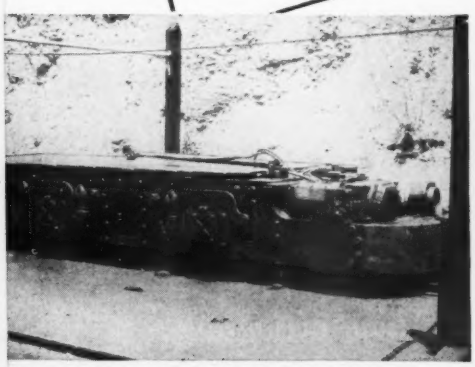
This Sullivan coal drill is powered by the dependable Westinghouse explosion-tested SK, the standard of the coal mining industry.



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FOR EXPLOSIVE ATMOSPHERES—SK Explosion-Tested (D-C.) Motors have all the features that have made the SK the mining industry's choice. New design permits close coupling without sacrifice of ventilation . . . . quick accessibility of brushes and commutator.

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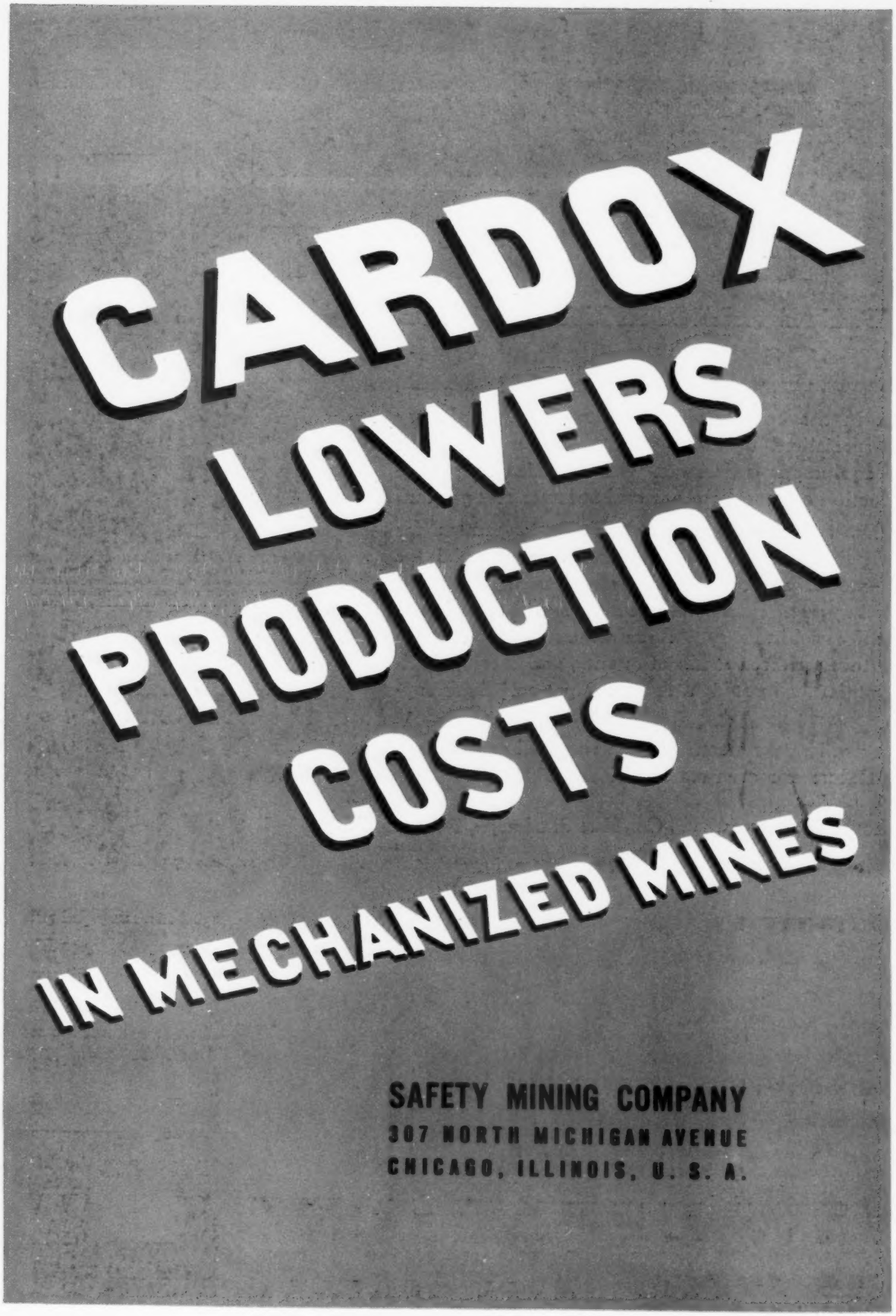
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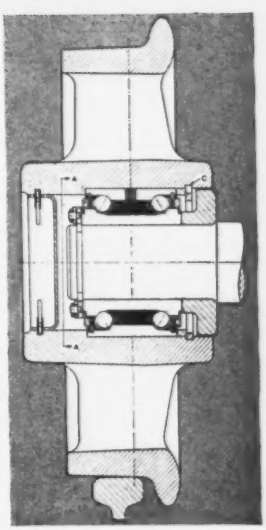

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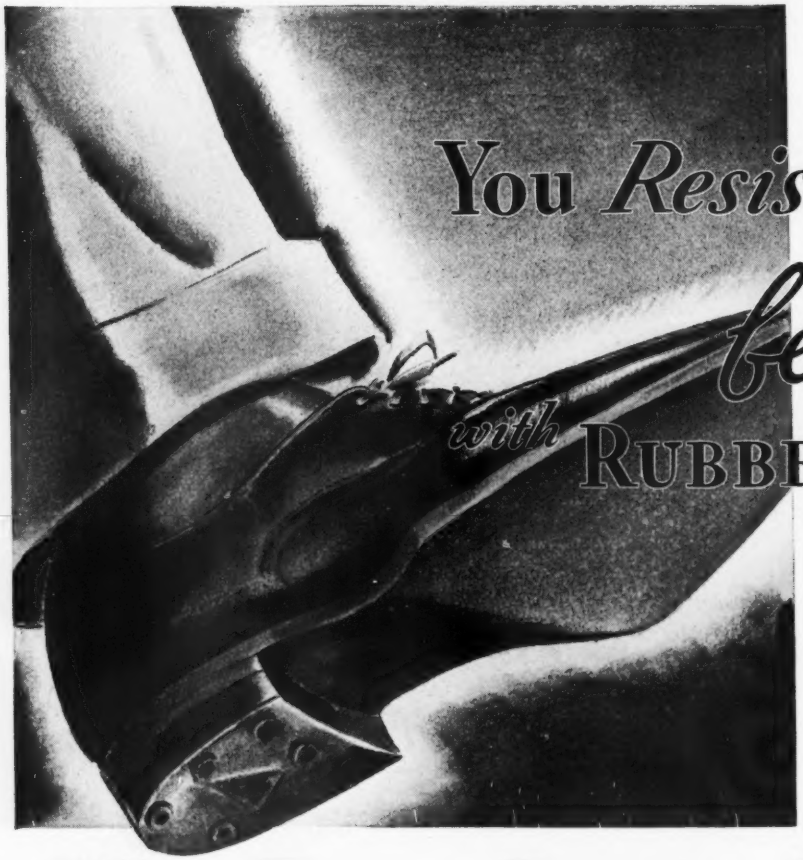
THE *FORGED STEEL* BEARING

2553



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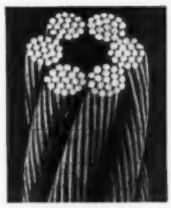
..Wire Rope *Resists Fatigue* *longer when* PREFORMED

● Rubber heels very effectively reduce the strain and internal muscular stress of walking. They help you resist fatigue.

The preforming process very effectively reduces the internal torsional stress from within the wires and strands of wire rope. This reduction of stress and strain helps preformed wire rope resist fatigue—and therefore it lasts longer.

But not only does preforming tend to eliminate internal torsional stress, but it makes a rope that is flexible and limber, easy to handle, and one that resists kinking. Preformed rope requires no seizing when cut. It splices easily, runs true and spools perfectly. For many jobs preformed rope will give you much greater dollar value. Ask us to send you a sample of preformed rope. It will come to you without obligation or salesman's "follow-up."



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Democracy and Majority Rule

AGAIN has the Supreme Court of the United States demonstrated its masterful grasp of the fundamental principle of Representative Government under a constitution granted by Sovereign States, each of which reserved to itself the control of all questions not of an interstate character.

The writer believes that the principles of the Wagner Labor Act are wrong and that the uses which will be made of its provisions will not only destroy the liberty of many citizens, but will in the end work to the great disadvantage of those it was intended to benefit.

He also believes that the decision of the United States Supreme Court was right and that the finality of a five to four decision again demonstrates the wisdom of the framers of the Constitution.

Five to four decisions are not, as is frequently claimed, the act of one man. Such decisions are the act of five men.

There are many who profess to believe that no court whose decision is determined by one man can be trusted with the fate of important problems. These fail to appreciate the necessity of majority rule as a basis of democracy.

It might be that one honest vote, even in Maine or Vermont, might decide the presidency of the United States.

If the balance of the nation was evenly divided, that single vote would make the majority the control which would be vital to the preservation of our government from anarchy.

The first Guffey Coal Act was properly decided to be unconstitutional.

The New Guffey Coal Act is designed to meet the court's objections and, in the end, its friends will be more than glad that the present law has been so improved, by casting out the weaknesses pointed out by the Supreme Court, as to make it more workable and its opponents will be glad that its provisions have been made less intolerable.

It will be well for those who believe that the law is so exact a science as to make possible unanimous decisions in all cases, to consider that, if this were true, there would be no need for courts.

Mathematics is the only science so exact as to make possible absolute conclusions.

Exact justice will always be the goal sought by all but litigants and litigants are seldom fair and seldom seek exact justice.

Our forefathers designed a government with provisions for the settlement of all disputes of every nature.

Only the lawless seek other methods for the determination of their rights.

Majorities are frequently wrong but, right or wrong, majority control is fundamental and without it there can be no such thing as democracy.

Courts of final jurisdiction are and must be so constituted as to avoid deadlocks and to insure final verdicts. A majority of one, whether of a court or a nation, must prevail, if democracy is to prevail.

The Mining Congress Journal

Vol. 23 MAY, 1937 Number 5

E. R. COOMBES, Editor

A Journal for the entire mining industry published by The American Mining Congress

Spending and Deficits

ONE OF THE MOST unpleasant subjects to face at any time is that of a deficit. Yet we, as a nation, are now face to face with the largest deficit ever accumulated by us. The warning finger has been raised and the stark truth brought to light. We seem on our way to national bankruptcy unless a sudden and definite halt in expenditures is called, and drastic retrenchment in spending is made an actuality.

According to Treasury figures, our deficit has reached, since June 30, 1933, some $14,859,400,000. This deficit has climbed at the rate of more than three billions annually for the years 1934-1935-1936-1937. On June 30, 1933, it had climbed to what we then thought a colossal figure—$3,491,800,000. For the seven years' period—1930-1937—we have spent some $18,351,200,000 more than we have received in revenue; red ink is never popular, but such excessive use of it is nothing short of appalling.

Senator Harry F. Byrd, who has waged a strenuous campaign against excessive spending, recently called attention to the vast increase in Government agencies, personnel and expenditures. His statement was based upon a report by the Brookings Institution in a survey of the Federal Government. The Senator asks pertinently whether the so-called emergency expenditures are to be frozen into permanency. This, of course, will depend upon the attitude of Congress, which, at this time, is not reassuring if we may judge from the manner in which the President's recommendations for economy were accepted.

In all this orgy of spending, and mad rush to secure bigger and better appropriations, the President's warning message is a welcome sign. If Congress follows his recommendation, there will be an end to the stream of wasteful projects and prodigal spending. But we must go further—much further—if we are to reach a sound financial basis; there must be a pruning of expenditures, an elimination of Government agencies, and a great reduction in the personnel employed. Using the pruning knife will not be popular, but in the end it will be far more popular than increased taxes, and growing national alarm over waste of the money so raised. If the President undertakes the job he will need the backing of Congress, and it will call for all the skill, vision and diplomacy at his command. The pay roll expense of the Government today, aside from relief, military and pension rolls, totals more than a billion and a half annually. Civil personnel increased more than a thousand a month between December, 1934, and September, 1936. This not only increased salaries but developed an immediate housing situation. According to Brookings Institution, 8 buildings of the dimensions of the Empire State Building would be required to house Government activities in Washington, and 52 more for thousands outside Washington.

With the facts squarely before the people, and with the President anxious to call a halt, surely Congress will adopt a program of active retrenchment.

Collective Bargaining and The Wagner Act

AFTER THE BARRAGE of invective for and against the Wagner Act has spent itself, one fact emerges clearly: the reach of Federal authority has been extended materially. Apparently the question now is "how far" Government may go in regulating major industries; not the "constitutional right" of Congress to regulate them.

The Court's decision points out that "The American state is a federation of sovereignties and that the central government's authority must be measured in specific instances with reference to the particular set of facts presented." The decision was based upon the Jones & Laughlin case, and the Court points out that that case does not involve all of the factors included in the National Recovery Act which it declared unconstitutional.

The decision brings us face to face with a situation which was not contemplated at the time the Wagner Act was passed. If the Act is construed in its entirety, not only to extend to a wider field of industry than was believed possible, but also to make the majority rule among the employes of each industry the law for all, then we have a new and rather menacing problem. If the employes are to be represented in their collective bargaining by those chosen by the majority, then in the light of the struggle among major labor unions, we can vision an impending battle. When the Wagner Act was passed, many regarded it as an Act to aggrandize the American Federation of Labor. Now that that organization has been challenged by CIO, we can see a bitter struggle with the employers and the public in the role of innocent and helpless bystanders.

It is obvious that other decisions will be necessary to mark distinctly the channels within which Federal regulation must flow. The major point settled by the decision is that "interstate commerce" has been materially widened.

The Importance of Knowledge

THE COAL INDUSTRY is reliably said to furnish the basis for some five hundred important industries. These industries, as well as coal, employ thousands of workers at good wages, pay taxes and otherwise contribute to industrial prosperity. In 1936 we produced 434-million tons of bituminous, and 54,760,000 tons of anthracite coal, a substantial increase over the 1935 record. The production of this tonnage required many things—men and machinery—capital and management. To have produced this vast tonnage with safety and efficiency is to the credit of the industry.

An important factor in the industry's record of safety and efficiency is the annual Coal Convention and Exposition of the American Mining Congress, held for 14 consecutive years. These meetings offer a major course in modern mining, plus an actual visualization of the adaptation of modern machinery to production. At no other point is it possible to obtain so much information with so little effort, and with so much accuracy. Coal men from all parts of the country congregate at these meetings, discuss their mutual problems, and return to their jobs enriched in knowledge which may be practically applied.

The past 12 months have witnessed marked increase in mechanical mining and in coal cleaning facilities. Mechanical loading and conveyor mining have materially increased throughout the United States, and the trend is definitely toward the completely mechanized mine. This trend has made necessary drastic changes in mining methods. The coming Cincinnati meeting will present the utmost in information upon these changes. May 17 to 21 offers a real opportunity to learn about Coal of Tomorrow.

Freedom

FROM OUR EARLIEST DAYS the old refrain "Let Freedom Reign" has been entrenched in our national philosophy. Are we to abandon it? Certainly recent trends would lead us to believe that we not only will, but in certain instances have, abandoned it. As witness those two great commonwealths—Pennsylvania and Colorado—and their recent legislative programs. Pennsylvania is admittedly operating under a labor government. Her Federation of Labor and Non-Partisan League demanded from the legislature a state labor relations act. They got it. And with it will establish a precedent worthy of note. The bill provides for compulsory collective bargaining and compulsory union recognition. It presents drastic provisions outlawing company unions; it compels employers' books and records to be subject to constant inspection. While these drastic provisions apply to industry, labor is not equally liable. It may violate contracts, call strikes, and the employer will have no recourse. Supplementing this proposed legislation is its corollary, the anti-injunction proposal, which forbids courts to interfere in strikes even when the walk-out is in violation of the contract. Another bill prohibits the use of the National Guard in labor disputes except upon joint petition of the county commissioners, the sheriff, the district attorney, and then at the discretion of the governor. So much for Pennsylvania, where we still maintain "Independence Hall," where the Declaration of Independence was signed!

Colorado, last November, voted 239,000 to 135,000 for an amendment to their Constitution which required that all Coloradans older than 60, who could qualify by law, be paid a pension of at least $45 a month. The months that have followed have developed one thing and one thing only: the certainty of tremendous new taxes, and an appalling financial and administrative crisis. It has reduced this grand old state from a healthy condition to a state facing millions in the red ink, and threatens near-confiscation taxes. The bill was sponsored by the National Annuity League, an offshoot of the Townsend Movement, and is of particular interest at the moment because of the activities of the league in other states.

Other states are not lagging. California's record is far from enviable; Indiana has just passed a bill giving the State Labor Commission broad inquisitorial powers. In the Administration we have our Secretary of Labor saying "The legality of the sit-down strike is yet to be determined." We have plenty of evidence of broad disrespect for law and order, and a lessening respect for Freedom. Apparently there are many of our citizens who feel that the word has been changed to "License."

These are dangerous trends, and not to be ignored. They call loudly for a better conception of Freedom—not for capital, nor for labor—but for ALL Americans.

Again . . . . . Coal Control

LABOR ORGANIZATIONS and many coal operators have continuously sought to place the coal industry under some sort of political dominance. The nearest approach to success is the final re-enactment of the Guffey-Coal-Control-Bill.

The coal industry has been for and against regulatory legislation, and there has been little neutral ground between the pros and cons. Be that as it may, the coal industry now *has* the Guffey Act. The merits and demerits of the legislation are submerged in this fact. Unquestionably the industry will accept the fact of law, and will try to make the best of whatever situation ensues. Certainly the industry needs all the help it can get when we consider the inroads of competitive fuels and the $100-million increase in wages presented in the recently signed Appalachian Contract.

What are the advantages and the disadvantages as applied to the entire—not any one section—of the industry? Granting the general premise that the law will permit "A fair return to capital, a fair wage to the worker, and a fair price to the consumer" where do we go from there? The purpose of the law is admittedly laudable. For many years, that "fair return, fair wage, and fair price" has been sung—but never attained. Admittedly, it is a scheme for governmental price fixing in the coal industry, and there are many who believe (including members of the Supreme Court) that authority to fix prices in a private producing enterprise is still unsettled.

Whether or not the program will work remains to be seen. Meantime, the industry may worry about the Government's attitude in similarly fixing the price tag of oil and gas. Labor says that these prices may be controlled by intensive organization of workers within those industries, but there is some doubt as to whether the coal industry will be patient under a market invasion that long.

This legislation presents the familiar twilight zone that offers the greatest drawback to the law. Just where shall Government regulation stop competition? This experiment in the coal industry is interesting, and will bear watching by many other major industries.

The Coal Industry

FOR fourteen consecutive years, one week in the month of May has literally been National Coal Week. Each year during this month, the American Mining Congress has presented its Coal Mining Convention and Exposition. The convention is an open forum for the discussion of safety and efficiency in producing the nation's coal supply, and the exposition is a visual presentation of the equipment designed to make the operators' task an easier one.

The convention and exposition will this year (as in previous years), be held at Music Hall, Cincinnati, Ohio, May 17 to 21 inclusive. Plans are being made to entertain the largest group ever attending this meeting. The Attendance Committee is predicting an attendance of some five thousand coal men. Their estimate is based upon the interest that is manifest in this year's meeting and the record of attendance over the last five-year period. This record shows a steadily increasing number of companies and representatives of companies. In 1933, 451 coal companies sent 3,480 representatives; in 1934, 2,287 representatives from 431 coal companies were present; this record increased in 1935 when 508 coal companies sent 3,023 men; and again increased in 1936 when 602 companies sent 3,889 men. Everything is in readiness to start the meeting off with the greatest enthusiasm. Final program has been mailed to the industry. Approximately 150 manufacturers are planning to show equipment. The Entertainment Committee has outdone itself in presenting items for the entertainment features. Cincinnati is preparing to welcome the largest crowd it has handled in connection with these meetings. Most of the leading hotels are now booked to capacity but the city has ample facilities to take care of at least ten thousand delegates.

Much credit for the success of this year's meeting goes to C. E. Cowan, vice president of J. H. Weaver & Co., Chairman of the general Program Committee and to Bruce G. Shotton, Hendrick Manufacturing Company and Chairman of the Manufacturers Division. Working with Mr. Cowan and Mr. Shotton has been a committee which represents 94 operators and 50 members of the manufacturers group. These men have worked diligently since the first of the year and they may well be proud of the result that has been obtained. Meetings have been held throughout the industry and hundreds of suggestions have been made for papers and various methods of making the meeting more profitable to the industry as a whole. In line with the industry's desire, the Program Committee has limited each session to not more than two hours. A special Floor Committee will time and present all of the papers and it is anticipated that this will result in a smooth-running convention and will at the same time give delegates a greater opportunity to visit the exhibits and for personal visits with each other.

The American Mining Congress has devoted many years to the development of safe and efficient mining practice. This convention and exposition is an outgrowth of this work. Starting in 1919 with its National Standardization Division, which developed a large number of Standard Mining Practices, it has gradually increased its scope until at the present time, through its Operators Committees, it coordinates the best thought of the industry and offers the only symposium upon every-day operating practices in the production of coal. The Operators Committees, which are taking a very active part in the development of the program, include the following representatives who are working upon the following topics:

Conveyor Mining

Tabulation of General Data, by T. F. McCarthy, Central Pennsylvania.

Tabulation of General Data, by George B. Pryde, Colorado and Wyoming.

Time Study, by T. F. McCarthy, Central Pennsylvania.

Single Unit System, by T. F. McCarthy, Central Pennsylvania.

Entry Development System, by T. F. McCarthy, Central Pennsylvania.

Entry Development System, by George B. Pryde, Wyoming.

Room and Pillar System, by George B. Pryde, Wyoming.

Room and Pillar System, by L. H. Schnerr, Central Pennsylvania.

Time Study on Room Mining, by District Committee of Central West Virginia.

at Cincinnati

Mechanical Loading

In Seams with Slate Partings, by H. A. Treadwell, Illinois.

In Seams with Slate Partings, by George E. Bayless, Ohio.

In Seams with Slate Partings, by H. B. Husband, Central West Virginia.

Time Study on Mechanical Loading, by O. S. Batten, Eastern Kentucky.

On Underground Power

D. C. Distribution Underground, by Carl Lee, Illinois.

D. C. Distribution Underground, by M. W. Horgan, Northern West Virginia.

D. C. Distribution Underground, by S. Austin Caperton, New River, W. Va.

Line Loss Chart, by M. W. Horgan, Northern West Virginia.

D. C. Distribution Underground, by C. W. Gibbs, Pittsburgh, Pa.

Track Resistance Chart, by F. L. Stone and M. W. Horgan.

D. C. Distribution Underground, by L. P. Crecelius, Ohio.

D. C. Distribution Lines, by J. O. Cree, Central West Virginia.

Power Costs Analysis Sheet, by H. P. Musser, Central West Virginia.

Summary of District Reports, by National Project Committee.

Cutting Bit Treatment

Cutting Bit Treatment, by J. L. Osler, Virginia.

Cutting Bit Treatment, by D. D. Wilcox, Illinois.

Cutting Bit Treatment, by George Osler, Pittsburgh, Pa.

Cutting Bit Treatment, by E. H. Shriver, New River, W. Va.

Cutting Bit Treatment, by Geo. B. Pryde, Colorado, Wyoming, and Montana.

Cutting Bit Treatment, by J. I. Snoderly, Northern West Virginia.

Cutting Bit Treatment, by T. A. Stroup, Central West Virginia.

Time Study on Cutting Machine, by J. F. MacWilliams, Central Pennsylvania.

Mining Systems

Mining Systems with Mechanical Loading, by T. C. Harvey, Utah.

Mining Systems with Hand Loading, by F. G. Smith, Ohio.

Mining Systems with Hand Loading, by J. M. Clark, New River, W. Va.

Mining Systems with Hand Loading, by W. W. Dartnell, Northern West Virginia.

Safety

Outline of Safety Education, by District Committee, New River, W. Va.

Outline of Safety Practices, by Albert Gately, Montana.

Outline of Safety Education, by W. F. Hazen, Ohio.

Outline of Safety Education, by District Committee, Illinois.

Outline of Safety Practices, by F. T. Fitzharris, Pittsburgh, Pa.

Outline of Safety Practices, by George B. Pryde, Wyoming.

Outline of Safety Education, by C. F. Keck, Southwest Pennsylvania.

Mine Haulage Roads

Wood Ties on Main Haulways, by Project Committee.

Steel Ties and Guard Rails, by Project Committee.

Tie Plates on Main Haulage, by A. R. Joyce, Project Committee.

Welded Rail Joints, by R. V. Clay, Project Committee.

Surface Preparation

Dedusting Coal, by C. L. Day, Northern West Virginia.

De-watering Washed Coal, by T. W. Guy, Central West Virginia.

De-watering Washed Coal, by District Committee of Central West Virginia.

De-watering Washed Coal, by J. C. Mabe, New River, W. Va.

De-watering Washed Coal, by W. H. Major, Southwest Pennsylvania.

Gathering Haulage

General Data on Gathering Methods, by C. C. Ballard, New River, W. Va.

Gathering Haulage Systems, by L. B. Abbot, Northern West Virginia.

General Data on Gathering Methods, by W. E. Buss, Indiana.

General Data on Gathering Methods, by G. A. Shoemaker, Pittsburgh, Pa.

General Data on Gathering Methods, by J. H. Richards, Ohio.

General Data on Gathering Methods, by George B. Pryde, Colorado, Wyoming, and Montana.

VENTILATION

Mine Fan Test, by J. J. Sellers, Virginia.

Mine Fan Test, by George B. Pryde, Wyoming.

ROOF SUPPORT

Comparative Beam Strengths, by A. R. Joyce, Ohio.

Fourteen years ago when these conventions and expositions were started, they gave little promise of the magnitude which this year's meeting presents. At that time mechanical loading was in its infancy and each mine that had developed an efficient method of operation felt that that method was its exclusive property and was loath to give out information concerning it. As the years have passed, and the value of the interchange of information has become known, the fallacy of this position has been demonstrated most forcefully. Today at these meetings there is a wide exchange of operating information. Companies gladly contribute to the general knowledge of the industry in safety and efficiency. The result has been a steady improvement in modern mine production methods until today few industries compare favorably with the efficiency of coal production. At that first exposition, 13 companies were banded together in the Manufacturers Division of the American Mining Congress to promote the idea. The exposition occupied one small hall. Today 150 manufacturers participate in the exposition and it occupies not one hall, but this year, four major halls. Exhibits will be found in the north and south wings, on the meeting room floor, and in the specially constructed annex, which has been built to accommodate the needs of those participating in the exposition.

The convention will open on Monday morning, May 17, at 10 o'clock. E. J. Newbaker, vice president of the Berwind-White Coal Mining Company, will preside at the opening session, presenting C. E. Cowan, chairman of the Program Committee, and B. G. Shotton, chairman of the Manufacturers Division. Four papers will be presented and much discussion of the topics has been arranged. At the Monday afternoon session, C. A. Gibbons, general manager of the Susquehanna Collieries, will preside. Six papers will be presented, each covering an interesting operating problem. Together the Monday sessions will present operating discussions upon Ventilation, Breaking Down Coal at the Face, Power Problems, Communication Systems, and Coal Treatment. An entirely new subject will be discussed on this day—that of Rubber-Tired Mine Haulage, as well as a new idea in ventilation, which is the result of extensive study by the Pennsylvania State College.

Tuesday offers an equally diversified program. The morning session will be presided over by Wesley Harris, president, Bicknell Coal Co., and five major topics will be up for discussion. Charles F. Hamilton, vice president of the Binkley Coal Company, and a former chairman of the Program Committee, will preside at the Tuesday afternoon session, when five topics will be presented.

Wednesday will present one of the most interesting programs of the convention. Carl T. Hayden, vice president and general manager of the Sahara Coal Company, will preside at the Wednesday morning session. In connection with one of the five topics, "Transportation by Underground Conveyors and Aerial Tram," there will be presented a motion picture, which will show the production methods of the Brule Smokeless Coal Company from face to railroad car.

The Wednesday afternoon session will be presided over by L. C. Campbell, assistant to vice president, Koppers Coal Company, and will present Hand Loading on Conveyors, Methods of Working a 20-inch Seam of Coal, Modern Mine Drainage, and the Work the Schools of Mines and State Colleges are doing in their mining extension courses.

Thursday, the last day of the convention, presents the maximum in convention programs. Otto Herres, vice president of the United States Fuel Company, will preside as chairman of the morning session. A feature of this session will be a symposium on Newest Things in Coal Cleaning, which will include New Methods in Drying Washed Coal, Dedusting, Oil Treatment, and Modern Coal Washing Tables. R. E. Salvati, general manager of the Island Creek Coal Company, will preside at the afternoon and closing session of the convention, which begins with a paper on the Future of Mechanical Mining and ending with a symposium upon Bituminous Coal Research Progress.

Friday morning has been set aside as exhibitors' day and the exhibits will keep open until 1 p. m. in order that all of those interested in seeing the equipment but who have not had time to do so may have an uninterrupted period for this purpose.

W. W. Dartnell has served as chairman of the Committee on Arrangements. In this capacity he has had the direction of the work of the committees on Building Attendance, on Welcome to Delegates, Entertainment, Floor, Contests, and Publicity. Serving with him have been such well-known representatives as John C. Cosgrove, president of the West Virginia Coal & Coke Corporation, and John Coakley, advertising manager of Thomas A. Edison, Inc., whose responsibility it has been to create the maximum interest in the convention and to bring out the largest number of delegates; Newell G. Alford, consulting engineer, Pittsburgh, Pa.; and W. H. Cordes, American Steel and Wire Company, who will be on hand to see that every delegate has a proper appreciation of the meaning of the word "cooperation." H. B. Husband, whose responsibility it will be to see that the convention sessions are run with despatch; W. D. Turnbull, Westinghouse Electric and Manufacturing Company, who will be responsible for the entertainment features; A. W. Fisher, McGraw-Hill Publishing Company, Inc., who is in charge of contests and prize awards; and W. W. Rodgers, Westinghouse Electric and Manufacturing Company, who has been responsible for keeping the industry and the press fully informed as to the developments of this important meeting.

The entertainment features are the most ambitious thus far attempted. The committee, headed by Mr. Turnbull, is presenting an array of talent that is entirely worthy of the distinguished audience it seeks to please. Beginning on Monday night at 8 o'clock and ending on Thursday evening at 2 a. m., the entertainment features hit new highs. Monday will present, in response to a request from the industry at large, a repetition of the Miners' National Amateur Contest. This is an effort to select the best talent that the industry has to offer. The winner of the contest will

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It is sound policy to occasionally free one's self from the pressure of routine and of individual problems, and to endeavor to take stock of general trends.

It is impossible to sufficiently know, and to soon enough know, important developments which are continually in progress, except by briefly getting away from our desks, our own small groups of associates, and by sampling the thoughts, experiences, and efforts of others.

The value of the Cincinnati Convention of the American Mining Congress as a national clearing house of this character for coal mining executives, has become so well recognized that it is scarcely necessary to urge attendance, or to press its claims for support. It is proper, however, to remind the industry that never have alert minds been so busy as now toward improvement in every phase of the business, and that the products of these efforts will be available in a well-arranged program in the form of pithy papers and discussions and in the exhibits of the machinery show.

For diversion in the evenings, splendid entertainment has been provided, both professional and amateur.

No effort has been spared to make the week a success, to have a convention that will rank with the great ones of the past, and to engage your support and good-will for those of the future.

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C. E. COWAN
Vice President, J. H. Weaver & Co.
National Chairman, Program Committee

District Chairmen—Program Committee

W. C. Stark

Frank G. Smith

E. B. Agee

G. Stuart Jenkins

W. H. Stewart

J. J. Sellers

T. F. McCarthy

E. R. Price

C. A. Garner

Merl C. Kelce

Committee on Arrangements

Newell G. Alford

W. D. Turnbull

A. W. Fisher

John Coakley

W. W. Dartnell
General Chairman

John C. Cosgrove

W. W. Rodgers

Committee Chairmen

Attendance
John C. Cosgrove
John Coakley

Publicity
W. W. Rodgers

Welcome
Newell G. Alford
Wilmer H. Cordes

Entertainment
W. D. Turnbull

Contests
A. W. Fisher

Wilmer H. Cordes

BRUCE G. SHOTTON
Hendrick Manufacturing Company
Chairman, Manufacturers Division, American Mining Congress

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New Things to Be Seen at the Exposition

New models of ball bearing, geared screw jacks.
Improved plain lever lifting jack.
Carbic floodlights and outfits.
Cutting machine bits.
New "National Intensarc" carbon arc welding electrodes.
A new car spotting hoist.
A new room and general utility hoist.
New trip drag line.
Positive eccentric vibrating screen on which the throw or extent of vibration can be varied to suit the material to be handled.
A strength tester, using a dunamometer test gauge which registers up to 7,500 lbs.
Methods of determining ash and sulphur content of coal.
A mine car wheel, together with ball and roller bearings and pillow blocks.
New "Cartridge" completely enclosed ball bearings with removable seals and grease refilling plug.
Metal sealed ball bearings.
A new method of coal drying, recently introduced in this country.
Center-guide belt conveyor—for underground haulage.
The Speed-o-Matic shovel-dragline for stripping and loading coal.
A working model of a new coal washing unit.
New type insulation that is permanently waterproof.
Conveyor scale which secures the exact weight of coal as it is conveyed over a belt.
Deep well turbine pump in operation.
Splash proof motor in operation.
An improved steel switch tie and switch stand model with new safety features.
New line of automatic lowering jacks.
A large automatic encyclopedia on the mineral resources of Illinois.
Chromated zinc chloride as a fire retardant wood preservative.
Tru-Tu-Life safety dramalogue.
New portable conveyor with rubber-tired casters.
The lowest low vein mounted bottom cutter ever built.
Shaker conveyor, streamlined drive.
Troughed belt conveyor operated by 20 H. P. motor and push button control.
New small sized rail welding equipment.
Method of applying salt preservatives to wood without mechanical pressure treating equipment.
Latest improved type vibrating screen.
New coal washing table.
Three new coal cutters.
New method of coal transportation.
A new motor-driven flexarc welder.
A complete line of material for supporting trolley wires and feeders.
A modern fan-cooled squirrel cage motor for use in dusty or hazardous locations.
A modern fan-cooled explosion-tested motor.
The modern combination of De-ion breaker and linestarter for starting A. C. motors.
An entirely new direct current motor starter.
An Electronic instrument for studying the performance of machinery and equipment under load.
An inductive thermal overload relay.
New methane detector.
Low velocity anemometer.
Clean air blowers and air line respirators.
New type flexible pacs and knee pads.
Improved sectional mine conveyor.
A loop boot elevator for handling dust and smaller sizes of coal.
An underground sectional belt conveyor built with a tubular frame from standard knock down parts.
Mine car coupler-equipped with draft gear, of interest to the operators using larger capacity cars.
A reversible motion cushion drive shaker conveyor.
Radically new design of belt idler for underground use, equipped with sealed-for-life bearings.
Ball and roller bearings on both room and face chain and flight conveyors making these units anti-friction bearing.
Up-to-date line of overhead trolley materials and rail bonds.
A new type of vent plug.
A patented type of terminal post seal.
Revolutionary new strippers.
A machine for filling tamping bags.
Steel mine ties.
Portable room blower.
Four-plane movable turret on which comparative trauzl block tests are mounted.
Air operated trail cars.
Stoker designed to burn mine's 48 mesh coal.
A cable vulcanizer for splicing cables.
A new line of belt conveyors.
Shaker conveyor drive.
A new cutter which undercuts topcuts and shears over entire reach of cutter head.
A portable conveyor built up in 25-ft. sections.
A multiflow coal washer.

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receive a cash prize and an opportunity to be heard over an NBC network. Companies who are participating in this year's event are the Pittsburgh Coal Company, the Koppers Coal Company, the Hanna Coal Company, Consolidated Coal Company, Central Indiana Coal Company, Island Creek Coal Company. The exhibitors will present an entry by representatives of the "Sit Down Coal Company." Featured throughout the entire entertainment will be the California Varsity Eight, a singing organization of eight men who for two years were a feature of the Ziegfeld Follies, and more recently have concluded a tour of the Schubert theaters; the Dorothy Byton Petite Revue, a group of 12 girls in ensemble and specialty dancing, who rank with the highest in this field of artistic endeavor; Ward Wilson, NBC's famous mimic and master of ceremonies; and the Kelly-Bahlke dancers. These young ladies were presented at the 1936 convention. Each evening from 10 to 2 a. m., in the Pavilion Caprice at the Netherland Plaza Hotel, in addition to the scheduled entertainment, will be music by a well-known dance orchestra.

Tuesday evening promises to be an hilarious event when the committee will present "A Night at the Gay Nineties." There delegates will have an opportunity to hobnob with replicas of Diamond Jim Brady, Steve Brodie, John L. Sullivan, Flo Ziegfeld, Lillian Russell, Jenny Lind,

Anna Held, and Della Fox. In addition, they will be able to meet Joe E. Howard, famous old-time song writer, who presented those popular tunes, "I Wonder Who's Kissing Her Now," "Hello, My Baby," "Honeymoon Lane," etc. Delegates may also meet "The Beautiful Brunette on the Police Gazette." Continuous vaudeville will be the order of the program from 8 until 11. Singers, dancers, bicycle riders, and other entertaining features. The atmosphere will be distinctly of the Nineties period and everyone will have a gay and delightful evening.

On Wednesday evening the committee will present the "Lucky Shoes Contest." Eighteen young ladies sponsored by coal companies will participate in this contest. The winner will be able to select Cinderella and present her with her golden slipper. There will be, in addition to this contest, singing by the Varsity Eight, dancing by the Petite Revue, special numbers by the Kelly-Bahlke dancers, and many other attractions.

The final entertainment event will be Thursday evening, with the annual speechless dinner. This dinner will, as in previous years, present entertainment in lieu of speeches. The guest artist for this year's dinner is Miss Jane Froman, assisted by the California Varsity Eight, the Byton Petite Revue, Ward Wilson as master of ceremonies, and Miss Ruth Hubach Best. The doors will open at 6.30, dinner will be served at 7, and the entertainment will start at that hour. Many innovations and delightful surprises have been arranged for the entire entertainment, and particularly for the annual dinner.

The exposition is probably the most important exhibit presented by the Manufacturers Division. In size it far exceeds any of its predecessors. It has spread from the north and south wings at Music Hall into the main lobby and to the second floor, where all sessions of the convention will be held. In addition, a temporary building, approximately 30 by 200 feet, will house an additional group of exhibitors. Individual exhibitors are outdoing themselves in presenting new equipment and in presenting old equipment in a new manner. Certainly delegates will have the opportunity to see everything that is new and the best of all the old equipment designed to bring about greater efficiency in coal production. Some of the larger manufacturers have taken great blocks of space. These include the Jeffrey Manufacturing Company, with more than 5,000 square feet; Sullivan Machinery Company, with an equal amount; Goodman Manufacturing Company; and the Joy Manufacturing Company. Many exhibitors have taken larger amounts of space, and there are many new exhibitors—companies who have never before presented their equipment for the attention of the industry. The General Electric Company has again loaned L. W. Shugg—one of the most successful of exposition managers—to serve as guest

Members of the

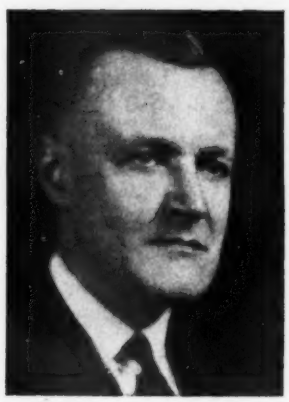
Chas. W. Connor

C. T. Hayden

Otto Herres

H. B. Husband

Harry La Viers



M. D. Cooper

Program Committee

Henry F. Warden

Thos. G. Fear

T. J. Thomas

W. L. Robison

T. R. Johns

C. E. Abbott

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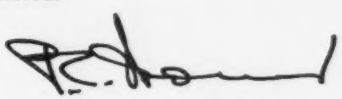
The Annual Coal Convention and Exposition of the American Mining Congress is an event which I know mining men everywhere look forward to each year with great expectation. There have been many fine comments about the excellent program and plans being made for the coming convention.

I consider that those connected with the wresting of mineral wealth from the earth have no finer opportunity of knowing what is being done in their particular branch of the industry than that presented at the annual convention. It is an education to the young men of the industry and an inspiration to those who are not so young to attend these meetings.

The manufacturers of mining equipment and all the allied lines of supplies and equipment which go into the art of mining have always done an outstanding job in presenting their contributions to mining in a manner which is unsurpassed anywhere.

I have only the highest words of praise for those of the industry, those of the manufacturers' group, and the Mining Congress staff, for the manner in which this outstanding industrial event is annually offered.



Koppers Coal Co.

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director. Mr. Shugg's work is an annual feature of this exposition and he has been loaned by his company to the Manufacturers Division for several years.

Howard I. Young, president of the American Mining Congress and president of the American Lead Zinc & Smelting Company, has extended a cordial invitation to the mining industry as a whole to attend the Cincinnati meeting. It is felt that this exposition offers much for the consideration of the metal mining industry as well as the coal mining industry, and special invitations have been issued to the nearby metal mining areas. The coal members of the board of the American Mining Congress have joined Mr. Young in urging attendance at this year's meeting. Eugene McAuliffe, president of the Union Pacific Coal Company and a director of the national organization, in a recent statement said: "The annual coal convention of the American Mining Congress offers the most constructive thought in the industry today. Bituminous coal operators cannot afford to miss the educational and

Members Program Committee

W. J. Borries

H. L. Griffin

C. J. Sandoe

Horace Moses

T. E. Jenkins

P. H. Burnell

R. H. Morris

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This national cooperative convention and exposition brings into intimate contact operators with operators, manufacturers with manufacturers, and operators with manufacturers, for a period of five days each year.

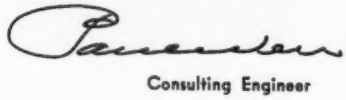
The exposition gives to the manufacturer the opportunity to display the latest improvements in production equipment to the men who purchase, install, and use it. The operators likewise can see, inspect, and discuss with the manufacturers what is offered.

The convention is a forum in which everyone discusses ways and means for safer, more efficient production of a better product.

Through common understanding of problems reached by discussion at these annual meetings, the manufacturer has been able to develop equipment to meet the needs of the industry. Likewise the operator has been able to learn the proper application of such equipment.

Cooperation is a much-abused word. It means many things to many people. However, it can be said that what we get out of any cooperative effort such as these meetings is directly proportional to what we put into them. This applies with equal force to the exposition, to the convention, and to the general good-fellowship which always prevails. Nowhere else can one see and learn so much in such a short period of time.

The opportunity is a fact. Manufacturers and operators who have taken full advantage of this same opportunity in previous years are out in front. This year the opportunity for immediate benefits are greater than ever before.



Consulting Engineer

H. M. Moses

I. N. Bayless

A. W. Hesse

B. H. Schull

T. W. Guy

O. S. Batten

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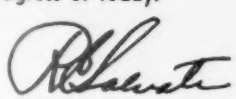
Last year's American Mining Congress Convention was, in my opinion, one of the best attended in the history of the Congress. More operating men visited the exhibits, which took up practically all available floor space, as well as attending the programs, than at any previous meeting. The programs were carefully and well rounded out and were, I think, outstanding.

The purpose of my message today is to state to operating people that they should again attend the convention this year, which is "The 14th." I have been in touch with the Washington office, as well as the national chairman of the Program Committee, Mr. Cowan, for the past six weeks, and I feel confident that this year's meeting will surpass even that of last year in attendance, and I also feel that the program will be more interesting, also that more manufacturers will exhibit their products. New floor space has had to be provided due to demand from manufacturing concerns for space in which to display their products. New machinery will be brought out and all up-to-date operating men should see this new machinery—in many cases in actual operation. Modernization in the coal industry today has progressed in the same manner and degree the machinery does. There is one way in which we can do this, and that is by studying and whenever possible making actual contact with the equipment necessary to modernize his mines. Attendance at this year's convention will go a long way in assisting men in the operation of mines to keep abreast with the modern trend and progress of today.



Island Creek Coal Co.

C. C. Ballard

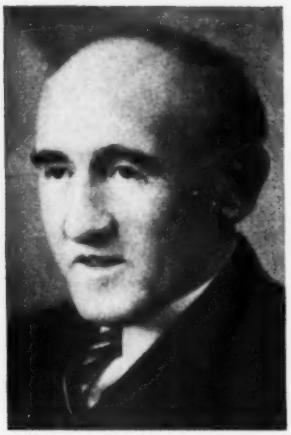
Members Program Committee

W. H. Lesser

J. G. Puterbaugh

R. A. Templeton

W. A. Buchanan



C. S. Blair

G. H. Rupp

M. W. Horgan

helpful ideas that originate at these meetings." A. B. Jessup, of the Jeddo-Highland Coal Company, representing the anthracite industry on the national Board of Dirctors, says: "All anthracite operators should bend every effort to go to the Annual Coal Convention and Exposition. We have derived much benefit from so doing in past years and I would urge my executives to send as many members of their operating staff as possible." J. D. Francis, president of the Island Creek Coal Company, also a director of the national organization, points out that "the exposition will be the greatest of its kind ever held. It offers a fine opportunity to see all of the new and modern types of machinery needed to produce the nation's coal supply, much of it in actual operation." W. J. Jenkins, president of the Consolidated Coal Company, in urging operators to attend says: "The exceptionally fine tone of these meetings makes it worthwhile for all progressive mining men to attend."

Coal men generally will agree with the view of the Board of Directors. Cooperating with the convention this year are many local and state organizations. The Appalachian Coals, Inc., is making a special effort to have the sales end of the industry represented. The New River Coal Operators Association is planning a special train to bring West Virginia operators to the meeting. The industry will be represented from the State of Washington to Alabama and from Pennsylvania to New Mexico. It offers the finest opportunity for coal men generally to gather ideas and to add to their store of knowledge in operating practice. The City of Cincinnati will open wide the gates of hospitality. Hotels, clubs, the coal exchange and all others interested in a successful coal industry will welcome the delegates. Howard I. Young has called a meeting of the Board of Directors of the American Mining Congress during the convention. The annual meeting of the Manufacturers Division will also be held during the

Members Program Committee

L. C. Skeen

F. S. Pfahler

Paul Sterling

D. R. Swem

Peter F. Loftus

H. H. Bubb

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The annual meetings of the American Mining Congress at Cincinnati are of exceptional value to all persons who are identified with and have to do with the coal and allied industries. There one may hear, read and discuss interesting papers on subjects of importance to the industry by men who not only know their subject but are thinkers as well as investigators and keen students with the ability to express themselves clearly. For a number of years I have attended these meetings and have profited from what I have heard and seen. Many companies send their employes to these meetings every year and later receive a report from them upon the interesting subjects they have heard. There always is something new and sometimes quite novel one can learn about to the profit of his company. One would be dull indeed who would come away feeling the meetings had not been worth while. They should be attended by all in the coal industry who can do so.

C. M. Lingle,
Buckeye Coal Company.

R. M. Fleming

PROG

THE AMERICAN MINING CONGRESS

COAL MINING

Music Hall, Cincinnati,

Monday, May 17

10.00 A. M.

CHAIRMAN: E. J. NEWBAKER, *Vice Pres., Berwind-White Coal Mining Co.*

INTRODUCING

C. E. COWAN, *Vice Pres., J. H. Weaver & Co. National Chairman, Program Committee*

BRUCE G. SHOTTON, *Hendrick Mfg. Co. Chairman, Manufacturers Division, American Mining Congress*

STREAMLINING MINE VENTILATION

H. LANDSBERG, *Geophysical Laboratory, The Pennsylvania State College.*

Discussion:

A. LEE BARRETT, *Pittsburgh Coal Company.*

BARRIER PILLARS TO BE LEFT IN MINE

C. S. BLAIR, *Vice Pres., Black Diamond Coal Mining Co.*

Discussion:

I. W. MILLER, *Coal Mng. Engr., Tenn. Coal, Iron & R. R. Co.*

M. L. COULTER, *Chf. Engr., Clearfield Bituminous Coal Corp.*

FLOOD CONDITIONS OF 1936 AS THEY AFFECTED MINING IN ANTHRACITE FIELD

JOHN M. HUMPHREY, JR., *Engr., Lehigh Valley Coal Co.*

CUTTING REQUIREMENTS FOR CONVEYOR MINING

J. O. CREE, *West Virginia Engineering Co.*

2.30 P. M.

CHAIRMAN: C. A. GIBBONS, *Gen. Mgr., Susquehanna Collieries Co.*

ADVANTAGES OF SECTIONALIZING POWER BY USE OF AUTOMATIC CIRCUIT BREAKERS

JOHN T. PARKER, *Supt., Inland Steel Co.*

COMMUNICATION SYSTEMS IN MINES

W. C. THOMPSON, *The New River Co.*

USE OF BATTERY LOCOMOTIVES IN THICK PITCHING SEAMS

A. C. WATTS, *Gen. Supt., Utah Fuel Co.*

IMPROVED (RUBBER-TIRED) MINE HAULAGE

J. H. FLETCHER, *Bluebird Coal Co.*

WAXOLIZED TREATMENT OF COAL

THOS. C. CHEASLEY, *Sinclair Coal Co.*

Tuesday, May 18

10.00 A. M.

CHAIRMAN: WESLEY HARRIS, *Pres., Bicknell Coal Co.*

EFFECT OF MECHANICAL VS. HAND LOADING ON DEGRADATION OF COAL

J. G. CRAWFORD, *Gen., Mgr. & Pur. Agt., Valier Coal Co.*

NEW AND PRACTICAL METHOD OF WORKING A 20" SEAM OF COAL

GUY E. LIPE, *Mgr. Dixie Fuel Co.*

FACE PREPARATION FOR MECHANICAL LOADING

T. A. STROUP, *Chf. Engr., West Virginia Coal & Coke Corp.*

Discussion:

F. F. JORGENSEN, *Mgr. of Production, Consolidation Coal Co.* (Effect of Type of Bit and Bit Lacing on Bug Dust Sizes.)

ADVANCED MINE-RESCUE TRAINING COURSE OF U. S. BUREAU OF MINES

J. J. FORBES, *Supervising Engr., Safety Division, Bureau of Mines Experiment Station, Pittsburgh, Pa.*

MERCURY ARC RECTIFIERS FOR COAL MINING SERVICE

A. L. LEE, *Cons. Engr., Pittsburgh, Pa.*

Discussion:

A. LEE BARRETT, *Pittsburgh Coal Co.*

MINING SYSTEMS FOR EXTRACTING PILLARS

H. L. GRIFFIN, *Division Engr., The Koppers Coal Co.*

Discussion:

R. L. ADAMS, *Gen. Supt., Old Ben Coal Co.*

2.30 P. M.

CHAIRMAN: CHAS. F. HAMILTON, *Vice Pres., Binkley Coal Co.*

SHEARING AS AN AID TO MECHANICAL LOADING

F. EARLE SNARR, *Res. Engr., New Orient Mine No. 1, Chicago, Wilmington & Franklin Coal Co.*

PREPARATION PROBLEMS IN ANTHRACITE FIELD

W. H. LESSER, *Elec.-Mech. Engr., Pierce Management.*

EFFECT OF ILLUMINATION ON PRODUCTION

L. E. ADAMS, *Spring Canyon Coal Co.*

CLEANING STRIP-MINED COAL (Little John Coal Company)

RAY BAUGHMAN, *Central Indiana Coal Co.*

TRACK-MOUNTED CUTTING MACHINES WITH MOBILE LOADERS

(a) P. D. EVERLY, *Prep. Supt., Island Creek Coal Co.*

(b) WALTER F. CLARKE, *Gen. Supt., Independent Coal & Coke Co.*

RAM

FOURTEENTH ANNUAL CONVENTION

Ohio, May 17-21, 1937

Wednesday, May 19

10.00 A. M.

CHAIRMAN: CARL T. HAYDEN, *Vice Pres. and Gen. Mgr., Sahara Coal Co.*

MECHANICAL LOADING ON CONVEYORS

JOHN C. LOWRY, JR., *Asst. Mgr. of Mines, West Virginia Coal & Coke Corp.*

Discussion:

EARL J. JONES, *Zanesville, Ohio.*

T. E. JENKINS, *Pres., National Fuel Co.*

BRINGING SAFETY HOME TO THE MINER

DAN HARRINGTON, *Chief, Health & Safety Branch, U. S. Bureau of Mines.*

Discussion:

OTTO HERRES, *Vice Pres. & Gen. Mgr., United States Fuel Co.* (Mine Accidents and Their Effect on Production and Production Costs.)

COAL PREPARATION IN ALABAMA

B. W. GANDRUD, *Supervising Engr., Southern Experiment Station, U. S. Bureau of Mines.*

AN APPROACH TO THE PROBLEM OF ANTHRACITE MERCHANDISING

BRUCE PAYNE, *Pres., Payne Coal Co.*

TRANSPORTATION BY UNDERGROUND CONVEYORS AND AERIAL TRAM

R. A. SUPPES, *Supt., Brule Smokeless Coal Company.*

(Motion Picture)

2.30 P. M.

CHAIRMAN: L. C. CAMPBELL, *Asst. to Vice Pres., The Koppers Coal Co.*

MODERN MINE DRAINAGE

(a) Dewatering of Abandoned Mines
A. B. KELLEY, *Gen. Mgr., Humphreys Coal & Coke Co.*

(b) Automatic Control of Large Mine Pumps
E. B. WAGNER, *Elec. Engr., Lehigh Valley Coal Co.*

SECURING TEAMWORK BETWEEN MANAGEMENT AND LABOR

CAREL ROBINSON, *Mgr. of Mines, Kelley's Creek Colliery Co.*

MINING EXTENSION COURSES

C. E. LAWALL, *Dir., School of Mines, West Virginia University.*

H. E. NOLD, *Prof. of Mine Engrg., Ohio State University.*

H. B. NORTHRUP, *Dir., Mineral Industries Extension, The Pennsylvania State College.*

HAND LOADING ON CONVEYORS—SINGLE AND MULTIPLE UNITS

(a) Long Face Mining
ERIC GEORGE, *Supt., Glen White Mine, The Koppers Coal Co.*

(b) Single Units
EDWARD FOX, *Supt., Colonial Colliery, Madeira, Hill & Co.*

(c) Multiple Units
B. F. REED, *Turner Elkhorn Mining Company.*

(d) Belt Conveyor Panel Costs by Development Periods
C. P. BRINTON, *Engr., Barnes & Tucker Co.*

Thursday, May 20

10.00 A. M.

CHAIRMAN: OTTO HERRES, *Vice Pres., United States Fuel Co.*

NEW DEVELOPMENTS IN METHODS WITH MECHANICAL LOADERS

G. STUART JENKINS, *Gen. Supt., The Consolidated Coal Co.*

DEFINITION OF LOAD DEMAND, LOAD FACTOR, POWER FACTOR, FOR AVERAGE MINE MANAGER—EFFECT ON POWER COSTS

M. W. HORGAN, *Mining Representative, Monongahela West Penn Public Service Co.*

Discussion:

L. W. BATES, *Appalachian Electric Power Company*

SAFETY BONUSES

J. J. SELLERS, *Vice Pres., Virginia Iron, Coal & Coke Co.*

Discussion:

C. A. SINE, *Safety Engr., Stonega Coke & Coal Co.*

COAL CLEANING

(a) Methods and Performances in Drying Washed Coal
T. W. GUY, *Cons. Engr.*

(b) Heat Drying Plant at the Delta Washery
W. H. PRICE, *Delta Coal Mining Co.*

(c) Use of Coal Washing Tables for Preparing Coking Coal
HENRY J. HAGER, *Prep. Supt., Alabama By-Products Corp.*

(d) Oil Treatment
M. H. FORESTER, *Mgr. of Prep., Consolidation Coal Co.*

(e) Dedusting Methods
HENRY F. HEBLEY, *Prep. Dept., Commercial Testing & Engineering Co.*

2.30 P. M.

CHAIRMAN: R. E. SALVATI, *Gen. Mgr., Island Creek Coal Co.*

THE FUTURE OF MECHANICAL MINING

PAUL WEIR, *Cons. Mng. Engr., Chicago, Ill.*

BITUMINOUS COAL RESEARCH PROGRESS

JOHN C. COSGROVE, *Pres., Bituminous Coal Research, Inc.*

Discussion:

HOWARD N. EAVENSON, *Cons. Mng. Engr.*

RALPH A. SHERMAN, *Fuel Engr., Battelle Memorial Institute.*

A. W. GAUGER, *Dir., Mineral Industries Research, The Pennsylvania State College.*

H. C. HOWARD, *Asst. to Dir., Coal Research Laboratory, Carnegie Institute of Technology.*

M. M. LEIGHTON, *Chf., Illinois Geological Survey Division.*

J. E. TOBEY, *Mgr., Fuel Engrg. Div., Appalachian Coals, Inc.*

week, and a special luncheon meeting will be held for the Operators Committees of the American Mining Congress.

All delegates are invited to bring the ladies. They will enjoy the evening entertainment features and the events being developed for their entertainment during the day programs. These will include tentatively a luncheon, a bridge party, an automobile trip and possibly a visit to one of the large racing stables at Lexington, Ky. From every standpoint it would seem that 1937 will be the banner year for this convention and exposition and that the coal man and the manufacturer who misses it will indeed miss one of the greatest opportunities ever presented.

The following companies will present exhibits:

ABBE ENGINEERING COMPANY: Screens of special design for coal sizing.

ADVERTISING DISPLAYS, INC.: A "Tru-Tu-Life" Safety Dramalogue.

AHLBERG BEARING COMPANY: Will exhibit three distinct lines of bearings. Master ball bearings in single row, double row and self-aligning types, both in standard duty and heavy duty designs. The heavy duty bearings for severe mine service are equipped with bronze ball retainers of exceptional strength. They will also show Ahlberg ground bearings, and their line of mounted bearings. They will present new developments in shaft locking methods and lubricant sealing designs for ventilating fans, etc.

AIR REDUCTION SALES COMPANY: Will present Airco oxygen, acetylene, Airco DB welding and cutting apparatus and supplies, and other products manufactured by them.

THE ALLIS-CHALMERS MANUFACTURING COMPANY: This exhibit will center around a "rotwyn" portable rotary mine compressor, together with this company's line of electric motors, texrope V-belt drives and centrifugal pumps. They will also show a heavy duty "lowhead" horizontal vibrating screen in operation to demonstrate the sizing of coal.

AMERICAN BRATTICE CLOTH CORPORATION: Will present various grades of brattice cloth and mine vent flexible tubing.

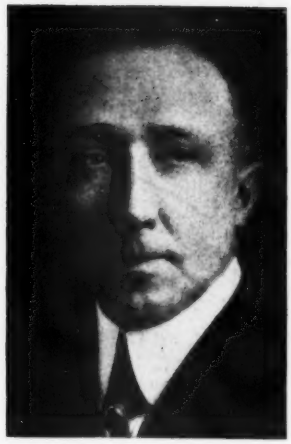
AMERICAN CAR AND FOUNDRY COMPANY: Will present a complete steel mine car, mine car wheels and a motion picture of their product in actual operation.

ANACONDA WIRE & CABLE COMPANY: New developments in mining machine cables of all types, featuring their bore hole suspension unit cable and suspension units.

AMERICAN CYANAMID AND CHEMICAL CORPORATION (Burton Explosive and General Explosives Division): Will present the newest developments in a series of explosives having a low rate of detonation and covering a large range of cartridge strength. They will offer an improved line of permissible explosives known as their new Burcoil and Genite series.

Members Program Committee

L. C. Campbell



C. W. Gibbs

R. A. Young

Walter F. Clarke

L. E. Geohegan

R. G. Pfahler

Members Program Committee

Wm. Lamont

H. S. Homan

Jos. L. Osler

H. P. Musser

L. E. Adams

Jno. T. Sydnor

ATLAS POWDER COMPANY: Will present their newest products and their exhibit will be directed toward education in the use of and selection of permissibles, black powder, explosives and blasting accessories.

AUSTIN-WESTERN ROAD MACHINERY COMPANY: Trail cars for coal haulage; various types of coal cars for rail haulage, exclusive of underground mine cars; 12-year hydraulic scrapers used in stripping coal mines, motor graders, cletrack tractors with bulldozers for preparing and maintaining haulage roads in open pit mines. They will also show crushing machinery for crushing waste materials. An outstanding feature of their exhibit will be their air operated trail cars, with automatic clamshell type doors controlled from the cab of the truck.

BETHLEHEM STEEL COMPANY: Will present a set of four special ties for use with mine turnouts. Three of the ties are used under the switch points; these have bolted clips which fasten the rails securely and which automatically locate these rails correctly. The fourth tie is used under the frog and positions the stock rails to the frog. They will also present the new model 1201 switchstand. The weighted lever moves parallel to the track and has a handhole grip in the weight and plenty leverage. The mechanism is on dead center when either point is closed, locking points securely and making it possible to get the weight in motion before starting to move the switch. They will present a comprehensive line of steel mine ties, switchstands, switchpoints, frogs, hollow drill steel, and an extensive line of mine track accessories.

THE BOWDIL COMPANY: Will show their electric transfer motor switches, spike bars, cutter chains and sprockets.

BRODERICK & BASCOM ROPE COMPANY: Will present a complete line of ropes designed for mining service.

BROWN-FAYRO COMPANY: Will present many new things, among them being a new "Brownie" car spotting hoist, designed for use in connection with conveyor systems operating in thin seams. The overall height of the unit is only 24 inches; a new room and general utility hoist; the Austin-Brownie mine gathering pump with a new 6 x 6 water cylinder which will be exhibited in operation; a new trip drag designed for safeguarding the handling of trips of mine cars on slopes.

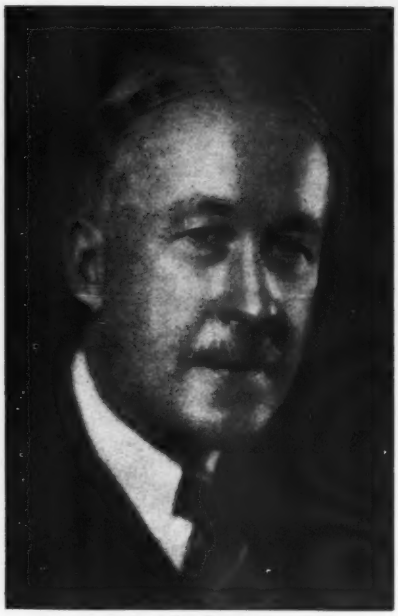
BUCYRUS ERIE COMPANY: This exhibit will center around their revolutionary new strippers which carry dippers up to 33 yards capacity, making them the largest capacity shovels in the world.

CALCIUM CHLORIDE ASSOCIATION: Methods of coal treating will be presented.

C. S. CARD IRON WORKS CO: (Mine cars).

CHICAGO PNEUMATIC TOOL COMPANY: Mounted electric coal drills

Howard I. Young
President



A. B. Jessup

W. J. Jenkins

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President, Secretary

and

Coal Representatives

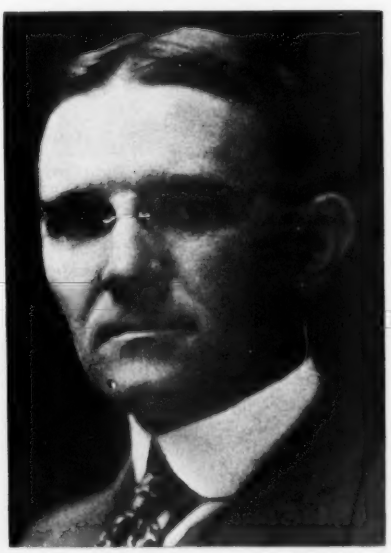
on Board of Directors

The American Mining Congress

+ + +

Eugene McAuliffe

Julian D. Conover
Secretary



J. D. Francis

and mounted portable handheld electric coal drills in both open and permissible types. They will feature safety chucks and switches for these tools. They will also display portable electric and pneumatic drills, nut runners, grinders, chipping hammers, riveting hammers, etc., pneumatic rock drills and pneumatic auger drills for drilling both rock and coal.

COAL MINE EQUIPMENT SALES COMPANY: (Data not available.)

COAL MINING: (A publication.)

COAL PROCESS COMPANY: (Data not available.)

COFFING HOIST COMPANY: (Data not available.)

CRESCENT LUBRICATING COMPANY: Greases designed especially for coal mining equipment.

CINCINNATI MINE MACHINERY COMPANY: Their exhibit will center around a new duplex bit machine.

DEISTER CONCENTRATOR COMPANY: Will present their latest improved type Leahy heavy-duty vibrating screen and their new improved coal-washing table.

DIFFERENTIAL STEEL CAR COMPANY: (Mine cars.)

THE DORR COMPANY, INC.: Will feature the use of the Dorr thickener at both anthracite and bituminous plants for the treatment of coal-laden wash-water. A feature of the exhibit will be the display of a 30-inch working model of the new Dorr torq thickener. Literature will be available on various Dorr units used in the coal field as well as operating data from many companies' installations.

DUFF NORTON MANUFACTURING COMPANY: Will present their new line of automatic lowering jacks.

DUNCAN FOUNDRY & MACHINE WORKS: Will present cast steel and grey iron mine car wheels; also a stoker which is designed to burn minus 48-mesh coal.

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The annual Coal Mining Convention and Exposition, the fourteenth of the series, to be held at Music Hall, Cincinnati, Ohio, May 17-21, represents the continuation of a work that has made a most extraordinary contribution to the welfare and betterment of the coal mining indusry.

I do not know who was responsible for the original conception of this work, which will unquestionably reach a new high peak in attendance and extent of exhibits this year. I presume all of the then officers of the Congress had something to do with the task. Certainly as measured by results, there should be glory enough to accord each person his or her due share.

The coal industry, after shrinking to rather abysmal depths, is again headed toward new heights, and the more than one hundred manufacturers who will participate in the forthcoming exposition have, individually and collectively, made a splendid contribution to the welfare of the industry. The serious losses sustained by the coal industry, (both anthracite and bituminous) to other sources of heat and energy, would have been infinitely greater were it not for the program of mechanization toward which our friends, the manufacturers, have done so much.

The hardships which the industry has suffered in the past few years have fortunately brought about an increased measure of operating efficiency with resultant reduction in costs, and what is of much greater importance, an increased measure of safety in and about the mines. While the process of labor negotiations yet long drawn out are far from perfect, a startling measure of improvement in the conduct of same has taken place within recent years. This forward movement will continue. There are today many veterans of the coal industry on both the employer and the labor side, who look forward to the day when an even more friendly and cooperative spirit will govern.

It is not unreasonable to say that the time is not far removed when wage agreements can be negotiated without extended delay and sufficiently in advance of the expiration of existing contracts as to entirely eliminate the worry, concern, and expense now suffered by the consumer, who, lacking the certainty of a continuous supply of fuel, is forced to build up an expensive and artificial protection which, in the majority of cases, subsequently turns out to be an added and unwarranted item of expense.

Eugene McAuliffe

Union Pacific Coal Co.

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E. I. du PONT de NEMOURS & COMPANY: Will present their general line of explosives for mining service; also evaluation tests which indicate that chromated zinc chloride as a wood preservative has fire retardant properties superior to any similar chemical offered for this purpose.

THOMAS A. EDISON, INC.: Will present data concerning the utilization of storage battery haulage not only for gathering but also for main line work.

ELECTRIC RAILWAY EQUIPMENT COMPANY: Quick brake switches with channel iron bases. Complete line of new section insulators, dual trolley and feeder clamp splices, overhead trolley material and feeder devices.

ELECTRIC RAILWAY IMPROVEMENT COMPANY: Will display rail bonds and arc welding rheostats.

ELECTRIC STORAGE BATTERY COMPANY: Will present types of Exide and Exide ironclad batteries for use in mine haulage.

ENTERPRISE WHEEL & CAR COMPANY: Low type, large capacity mine cars of the four-axle design.

FAFNIR BEARING COMPANY: Will present a complete line of ball and roller bearings featuring heavy-duty sizes with special bronze retainer design produced expressly for the mining industry.

FAIRBANKS, MORSE & CO.: Will present scales, pumps, and motors with information concerning their Diesel engine line. They will feature the Printomatick weigher which automatically provides a printed record of the weight of coal cars as they pass over the live rails of the scale platform. They will present a mine gathering pump of the very latest design, and a double suction split case centrifugal pump for general water supply. Also alternating and direct current ball-bearing motors for mine service.

FLOOD CITY BRASS & ELECTRIC COMPANY: Will present a new product, a cable vulcanizer for splicing all rubber cables. They will show their standard line of brass and bronze parts such as trolley wheels, splicers, pole heads, and harps.

GENERAL ELECTRIC COMPANY: Will present a new mercury arc single anode multiple tank mine rectifier which is noted for its high operating efficiency and permits rectified DC power to be moved into the mine near the load center. They will also present a portable mine type motor generator set; a low height sealed equipped mine locomotive; a new mine type resistance welder; motor and control for all types of mine application; locomotive parts which are available for modernizing and improving mine locomotives which have been in service for a number of years.

GOODMAN MANUFACTURING COMPANY: Will present the new Goodman type 924, the lowest low vein mounted bottom cutter ever built, 24 inches high; a new shaking conveyor drive which is streamlined and can be used as a side or underneath drive; a new line of belt conveyors.

GOULD STORAGE BATTERY CORP.: Will present their Kathanode type of storage battery construction with a new type vent plug, incorporating bayonet type anchorage for quick removal and insertion. They will also present a patented type of terminal post seal.

GRASSELLI CHEMICALS COMPANY: (Data not available.)

GULF OIL CORPORATION: (Data not available.)

HAZARD WIRE ROPE COMPANY: (Data not available.)

Past National Chairmen Coal Convention and Exposition

W. L. Affelder
1925

Geo. B. Harrington
1926

Ezra Van Horn
1927

Dr. L. E. Young
1928

Paul Weir
1929

P. C. Thomas
1930

Ralph E. Taggart
1931

Geo. C. McFadden
1932

L. N. Thomas
1933

C. M. Lingle
1934

Chas. F. Hamilton
1935

R. E. Salvati
1936

HEITZMAN SAFETY BLASTING PLUG CORP.: (Data not available).

HENDRICK MANUFACTURING COMPANY: Will exhibit screen plates with various sizes and shapes of openings, flanged lip screens, dewatering screens, testing screens and perforated elevator buckets.

HERCULES POWDER COMPANY: Will present a full and comprehensive display of explosives and blasting supplies for all forms of coal mining.

IRWIN FOUNDRY & MINE CAR COMPANY: (Data not available).

I-T-E CIRCUIT BREAKER COMPANY: Automatic reclosing sectionalizing circuit breakers; high switchboard style automatic reclosing circuit breakers; a complete line of "Itelite" thermo breakers; a new thermal overload element recently developed for motor starting protective purpose.

JEFFREY MANUFACTURING COMPANY: Will feature a representative line of mining apparatus; coal washing, preparation and handling equipment; Jeffrey Blower and auxiliary ventilating fans; conveying units; Jeffrey handheld and post mounted drills; the 44-L loader for loading onto face conveyors; replacement and modernizing parts; dewatering screens and settling tank mounted on a single base; a single roll and flextooth crusher; in addition, Jeffrey will have its own "little theater" where moving pictures will be shown of their equipment in actual operation.

JOHNS-MANVILLE, INC.: (Data not available.)

JOY MANUFACTURING COMPANY: Four loading machines in operation; chain belt and belt conveyors and a new portable chain conveyor; Joy Junior, the new 8-BU, 11-BU and 7-BU.

THE JOYCE CRIDLAND COMPANY: Will present a complete line of jacks, mining machine jacks, automatic rolling jacks and plain lever jacks, of from 1 to 10 tons capacity.

KEYSTONE LUBRICATING COMPANY: Will display the latest developments in Keystone grease lubricants for all types of mining machinery including high temperature and water resistant greases.

THE KOPPERS COMPANY: Will present a display of all Koppers products, but featuring particularly the Wood Preserving Corporation and the Koppers Rheolaveur Corporation.

LADEL CONVEYOR & MANUFACTURING COMPANY: Will present a reversible motion cushion driver shaker conveyor; a display of radically new design of belt idler for underground use, particularly which is equipped with sealed for life bearings; ball and roller bearings on both room and face chain and flight conveyors making these units anti-friction bearing throughout.

LEHIGH SAFETY SHOE COMPANY: A complete line of all-leather safety shoes made with improved steel box toes, miners pacs and boots.

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The complex nature of our modern civilization presents to every industry problems that require cooperative effort and thought in their solution. This is particularly true of the coal mining industry which today is faced with competition from other sources at a time when the trend toward socialization and governmental control imposes upon it rules, regulations, and restrictions accompanied by a terrific burden of taxation.

We recognize the fact that the manufacturing industry faces similar problems and that its interests demand that we cooperate with the mining industry in meeting these problems.

For the past 14 years the annual meetings between those engaged in the coal mining industry and the manufacturers who supply that industry with equipment have accomplished much good. The recognition by both groups that many of their problems are mutual has eliminated much that was detrimental to all concerned. Safety has been promoted. Competition has become more ethical. There has been scientific application of research which has resulted in opening up new markets for coal—elimination of waste—improved machinery.

The need for a continuance of cooperation between manufacturers and the mining industry is self-evident. We believe that our annual meetings will enable us to meet the problems of the future so long as we will make a determined effort to maintain the advancements that have been made in all that pertains to the coal mining industry.

Bruce G. Shotton

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A. LESCHEN & SONS ROPE COMPANY: Various types of standard round strand constructions, flattened strand constructions, and wire ropes of the preformed type.

LINK-BELT COMPANY; Roto-Louvre Dryer—a new method of drying recently introduced in this country; center guide belt conveyor for underground haulage; the speed-o-matic shovel dragline. In addition, there will be a complete line of Link-Belt equipment, including a stoker, miniature model of the Simon Carves preparation plant, motorized helical gear speed reducers, underground belt conveyors and a complete line of chain power transmission units and elevating and conveying accessories.

THE LOUIS ALLIS COMPANY: Will feature their complete line of motors designed for mining service.

THE MACWHYTE COMPANY: Will display specially designed wire ropes for shaft hoist, mining machines and loaders, incline hoist and shovels and draglines. They will feature a special braided wire rope sling which is the only one of its kind.

MARION STEAM SHOVEL COMPANY: Photographs and other material showing modern coal stripping and loading shovels, such as are now in use in the strip fields of Indiana, Illinois and Kansas.

THE McNALLY-PITTSBURG MANUFACTURING COMPANY: Will present exhibits designed to show their accomplishments in coal preparation work.

MCGRAW-HILL PUBLISHING COMPANY: Will have on display current issues of *Coal Age*, as well as McGraw-Hill publications and books of interest to the coal mining trade.

MANCHA STORAGE BATTERY LOCOMOTIVE COMPANY: (Shown by the Goodman Manufacturing Co.).

METAL & THERMIT CORPORATION: Thermit process of welding rails into long continuous stretches.

MINE SAFETY APPLIANCES COMPANY: New Methane detector, low velocity, anemometer, clean air blowers and air line respirators; new type flexible pacs and knee pads; Edison electric cap lamps and a complete line of safety equipment for the mining field.

MORROW MANUFACTURING COMPANY: A miniature model of "Prins Multiflow Coal Washer."

MOSEBACH ELECTRIC & SUPPLY COMPANY: (Data not available).

MYERS-WHALEY COMPANY: Will show a Whaley automat machine in operation; a working model of the shoveling motion of their rock loading machine, and photographs illustrating the use of automats in both coal and rock work.

NACHOD & UNITED STATES SIGNAL COMPANY: (Safety signals).

NATIONAL CARBON COMPANY: Oxy-acetylene welding and cutting blow pipes, regulators, etc., prest-o-weld and purox welding and cutting equipment; carbic floodlights; coal undercutter bits; a complete line of carbon graphite and metal graphite brushes for electric motors, generators and convertors. They will show a new national Intensarc car-

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The attendance at the annual convention of the Coal Division of the American Mining Congress, while composed largely of operating men, is also favored by the presence of a certain number of the heads of large operating companies. Generally speaking, coal organizations are divided into the selling department and the operating department, and the operating man who is fortunate enough to have his superior spend at least a day at the convention, viewing particularly the advancements made in mining machinery, is in a much stronger position to successfully secure appropriations for new equipment when his superior has had the opportunity to personally inspect and grasp the advantages which new machinery will produce.

From the operating angle, it is my belief that the Congress is little different from other associations of its kind, in that you may secure from it benefits in about the proportion to the efforts which you individually put forth. Consequently, my personal experience teaches me that it is to the advantage of every operating man in the industry to encourage and work for the success of this annual convention.

C. F. Hamilton

Brinkley Coal Co.

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bon arc welding electro, and their Eveready mine safety flash lights and shot firing units.

NATIONAL ELECTRIC COIL COMPANY: (Data not available).

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY: Will have on display their regular line of mine car hitchings, mine car couplers and mine car wheels. An outstanding feature will be their Willson mine car coupler with friction draft gear.

NEW DEPARTURE COMPANY: Will present their line of conveyor roller bearings and mine car bearings of which there are approximately seven million in use. They will also show a cut open mine car wheel, showing bearing mounting; special sheave mounting, new conveyor mounting, ball demonstrating machine.

NORBERG MANUFACTURING COMPANY: Will show their Symons double deck, horizontal vibrating screen.

NORMA-HOFFMAN BEARINGS CORPORATION: Samples of various types of ball, roller and thrust bearings; pillow blocks and mountings; a new type of self-enclosed ball bearing with removable seals and grease refilling plugs.

THE OHIO BRASS COMPANY: A complete and up-to-date line of overhead trolley materials, rail bonds, designed to take care of haulage conditions.

OSMOSE CORPORATION OF AMERICA: The Osmose process of wood preservation, which can be applied to wood without mechanical pressure.

PENN MACHINE COMPANY: Everlast, superweld rail bonds in various types; a series of photographs showing the various departments of this company in operation and a full line of their replacement parts for various types of mining machines and locomotives.

PHILCO RADIO & TELEVISION CORPORATION: (Data not available).

PHILLIPS MINE & MILL SUPPLY COMPANY: Improved mine cars.

PORTABLE LAMP & EQUIPMENT COMPANY: A line of personal protective equipment for miners, including cap lamps, flame safety lamps, cool caps, and cool hats, leather and rubber safety shoes and boots, respirators, goggles, knee pads, also safety track materials, including car stops, skids, derails and splicers and first aid materials.

POST-GLOVER ELECTRIC COMPANY: (Data not available).

PRODUCTIVE EQUIPMENT CORPORATION: Positive eccentric vibrating screen on which the throw or extent of vibration can be varied to suit the particular material to be handled.

FRANK PROX COMPANY: (Data not available).

PURE CARBON COMPANY: A revolving display of various types and sizes brushes used on mining equipment.

PURE OIL COMPANY: Complete line of lubricants recommended for use in the mining industry.

ROBERTS & SCHAEFER COMPANY: Stump airflow coal cleaner, together with photographs illustrating the Menzies hydroseparator, and the wuensch coal cleaning process; also photographs of the most recent coal cleaning plants that have been constructed by this company.

ROBINS CONVEYING BELT COMPANY: Will show a Robins Eliptex screen and a section of their improved sectional mine conveyor.

ROBINSON VENTILATING COMPANY: Newest designs in mine fans.

JOHN A. ROEBLING'S SONS COMPANY: A display of wire rope, woven wire fabrics and insulated wires and cables.

SANFORD-DAY IRON WORKS, INC.: (Data not available).

ST. LOUIS POWER SHOVEL CO.: (Shown by Goodman Mfg. Co.).

SIMPLEX WIRE & CABLE COMPANY: Cables insulated with a special process which is permanently waterproof.

SKF INDUSTRIES, INC.: A mine car wheel together with ball and roller bearings and pull blocks used in the mining industry.

SOCONY VACUUM OIL COMPANY: (Data unavailable).

STANDARD OIL COMPANY: Photographs, photo dioramas and transparencies showing typical pieces of mining equipment, together with suggestions for their economical lubrication and maintenance.

STEPHENS-ADAMSON MANUFACTURING COMPANY: A loop boot Redler elevator such as is being used for

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The basic policies of production management are gradually undergoing fundamental changes. The coal industry is living in a progressive age augmented by careful study of operating conditions and the exchange of experiences in practical mine operation. The study of improved and new machinery designed to meet varied operating conditions requires untold hours to keep apace with the times. Lack of time on the part of mine management makes it impossible to visit neighboring mines to exchange ideas and experiences; so once each year the annual coal mining convention and exposition of the American Mining Congress affords an opportunity to men of the industry to spend a few days together in the study of mining problems. Manufacturing concerns spare neither time nor money in arranging exhibits for this annual event. Success is better achieved through cooperation, and benefits derived from attending this great show cannot be measured from a "dollars and cents" standpoint. I have with great interest attended and participated in these annual meetings for a number of years and if I can say anything worth while at all my message would be "Spend the week of May 17 in Cincinnati—you will never regret it."

Ezra Van Horn

Chairman,
Ohio Coal Control Association.

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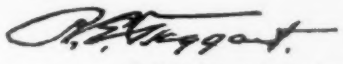
There have been few times in recorded history when daily events have been as momentous in their import as at present. Our part depends upon our line of action after careful thought and review of all factors, and in then acting and not just waiting for "something to happen."

Therein lies the key to one of the great values of the American Mining Congress Conventions. Men having a community of interest; bound together for the common purpose of meeting similar problems under varying conditions; each doing his best in his respective job; sharing experiences, passing along personal achievement, and solidifying the mining industry into a unified and united organization so that we may better win from Mother Nature her great bounties for which we are now responsible. These are forcibly impressed upon us at each of the conventions of the American Mining Congress.

It has been said, "The more extensive a man's knowledge of what has been done, the greater will be his power of knowing what to do." We have the men, we have the equipment, and the conventions of the American Mining Congress help us to get the vision of how we might attain our ultimate goal, by exchanging experiences and acquiring knowledge of what our associates have been and are now doing.



Philadelphia and Reading Coal & Coke Co.

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handling dust and smaller sizes of coal; an underground sectional belt conveyor built with a tubular frame from standard knock-down parts.

STERLING PUMP CORPORATION: A deep well turbine type pump in operation.

SULLIVAN MACHINERY COMPANY: Three new coal cutters plus a most revolutionary development in the art of coal mining, presenting a new method of coal transportation.

SUN OIL COMPANY: Will feature Coalkote for dustproofing coal, coke and briquettes; they will also show various greases and lubricants specially designed for coal mining equipment.

THE TAMPING BAG COMPANY: Will feature a machine for filling tamping bags which has filled as high as 700 bags per hour. They will also show tamping bags and their "Red Necktie" brand tool steel, which is water hardening and will not chip or fly.

TEMPLETON, KENLY & COMPANY: A complete line of mine jacks, including new jacks designed during the past year.

TIDE WATER ASSOCIATED OIL COMPANY: A complete display of their lubricating greases and oils for the coal industry.

TIMKEN ROLLER BEARING COMPANY: (Data not available).

TOOL STEEL GEAR & PINION COMPANY: Will present their line of machine parts for all makes and types of mining machinery.

BERTRAND P. TRACY COMPANY: (Data not available).

W. S. TYLER COMPANY: (Data not available).

TYSON ROLLER BEARING COMPANY: Cageless tapered roller bearings as used in mine car wheels.

UNITED ENGINEERS & CONSTRUCTORS, INC.: A scene-in-action display of the Chance coal cleaning system.

UNIVERSAL LUBRICATING COMPANY: (Data not available).

UNITED STATES STEEL CORPORATION: The following companies will be a part of the United States Steel exhibit: American Bridge Company, American Steel & Wire, Carnegie-Illinois Steel Corporation, Columbia Steel Company, Cyclone Fence Company, National Tube Company, Scully Steel Products Company, Tennessee Coal, Iron & Railroad Company, Universal Atlas Cement Company.

UTILITY MINE EQUIPMENT COMPANY: (Data not available).

VIKING MANUFACTURING COMPANY: The Viking hot vapor coal treating process, also a motion picture showing in detail this method of treatment.

WATT CAR & WHEEL COMPANY: (Data not available).

WEIR KILBY CORPORATION: (Data not available).

WEST VIRGINIA RAIL COMPANY: A complete line of steel mine ties with photographs showing actual application in track work, manganese room and heavy duty frogs, standard heavy duty rail frogs and models of their full line of rails, splice bars and track work shapes.

WESTERN CARTRIDGE COMPANY: A display of blasting caps; a novel feature of this display will be the inclusion of a 4-plane movable turret on which comparative trauzl block tests are mounted; a full line of Western blasting caps on an illuminated open display panel.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY: A demonstration of the Stroboglow, a device which makes the layman question his

Officers of the Manufacturers Division

Wm. Goodman
First Vice-Chairman

Roy L. Cox
Second Vice-Chairman

Frank E. Mueller
Third Vice-Chairman

Calendar of Entertainment

MONDAY—

Miners National Amateur Hour, sponsored by the coal industry. Entertainment by Ward Wilson, famous mimic; California Varsity Eight, magnificent singing organization; the Byton Petite Revue, dancing to a nationally known band. To be held in the Pavillon Caprice, Netherland-Plaza hotel.

TUESDAY—

A night at the Gay Nineties, where you will see the reincarnation of Miss Jenny Lind, Lillian Russell, Anna Held, the Gay Nineties Belles, the Floradora girls, John L. Sullivan, Steve Brodie, Diamond Jim Brady, Gay Nineties Beaus, "Ted Lewis" Turnbull; Joe E. Howard, old time song writer; old-fashioned vaudeville show; dancing, both ensemble and specialty. Continuous entertainment from 8 P. M. Pavillon Caprice, Netherland-Plaza Hotel.

WEDNESDAY—

The Lucky Shoes Contest. Meet Miss Cinderella and her coach and four. Help find her slipper. 18 beautiful girls participating in a contest sponsored by coal companies. View the modern Maud Mullers, Farmer Jones, the City Slicker, the Town Constable, the starters, timers and barkers, place your bets. Entertainment by the Kelly-Bahlke Dancers, the Byton Petite Revue, Ward Wilson, and many others. Pavillon Caprice, Netherland-Plaza Hotel.

THURSDAY—

Annual Speechless Dinner. It is against the law to make an address. Guest star, Miss Jane Froman, assisted by the California Varsity Eight, Ward Wilson and Dorothy Byton's Debutantes. Good food, good music, excellent entertainment and a gala occasion. Hall of Mirrors, Netherland-Plaza Hotel.

LADIES ENTERTAINMENT

A get-together luncheon, a trip around the city, a bridge party. All ladies are cordially invited to each feature of the entertainment during the convention.

---

eyesight. This unit has the ability to spot motion and drops of water may appear to stand still or run backwards into the faucet. The device enables engineers to examine vibrations, stresses or strains that may be set up in rapidly rotating or reciprocating parts. Other products will include a new motor-driven flex arc welder; line material to support trolley wires and feeders with action insulators, sectionalizing switches, modern parts for old motors and controllers, coils and rewinding insulation, fac cooled AC motors, direct current explosion-tested motors.

WILLIAMSPORT WIRE ROPE COMPANY: (Data not available).

L. W. Shugg

Through the courtesy of the General Electric Company, will serve as director of exhibits

Of All Things . . .

The taxpayer can be thankful that not all the bills introduced become law. . . . Purely apart from the fact that it would mean 10,000 new laws every session, Congressmen have so far proposed measures which would require the spending of $186,000,000,000. . . .

Well, everybody knows Jim Farley has a lot of power. . . . But we never knew it extended into the hereafter. . . . He recently demoted General Robert E. Lee to a lieutenant colonel in getting out a new stamp issue. . . .

Social security is great stuff but one gets to wondering when he reads about our forefathers. . . . Their's was the root-hog-or-die kind and we're told that the country can't last if we let that type go on. . . . Seems like the old folks managed pretty well and didn't hold the country back either. . . .

Just as long as men strive to get into politics and women into society there's little chance for any peace in this old world. . . .

We haven't had any new alphabetical agencies for quite a while . . . except of course the proposed SCAA. . . . Supreme Court Adjustment Administration. . . .

Maybe the Federal Government will take a hand when the sit-down custom becomes so universal that nobody stands up when the band plays "Star Spangled Banner." . . .

It's a funny state of affairs. . . . While the Administration goes ahead, the nation goes behind. . . .

A dozen witnesses took 10 days in approving the President's Supreme Court plan. . . . Ninety witnesses occupied 34 days in opposing the proposal. . . . In these days of majority collective bargaining rights, there ought to be no question which side will win out. . . .

The Congress goes right on proving that it is not a "rubber-stamp." . . . Twenty-four hours after the President sent up the strongest "economy" message he has yet delivered, the House showed its independence by approving a $927,000,000 agriculture department appropriation bill after defeating every effort to slash it 10 percent.

A scientist reports that if the trailer craze continues a large percentage of the next generation will be bow-legged from learning to walk in them. . . . What about the percentage of the population who will be hump-backed trying to pay off the public debt? . . .

Including the $1½ billion recommended by the President for relief for the coming fiscal year, it will have cost just short of $21½ billion since 1932 to lift the Nation out of the depression. . . . To think it all started with a relatively small appropriation for the R. F. C. five years ago! . . .

Maybe recovery is here, but Federal spending doesn't show it. . . . On April 19 Uncle Sam had spent $6,036,213,456 so far this fiscal year. . . . Expenditures last year on the same date aggregated $5,750,539,223. . . . Of course, this year's spending is just a little over $50 for each man, woman, and child in the Nation. . . . Only some of us haven't gotten our $50. . . .

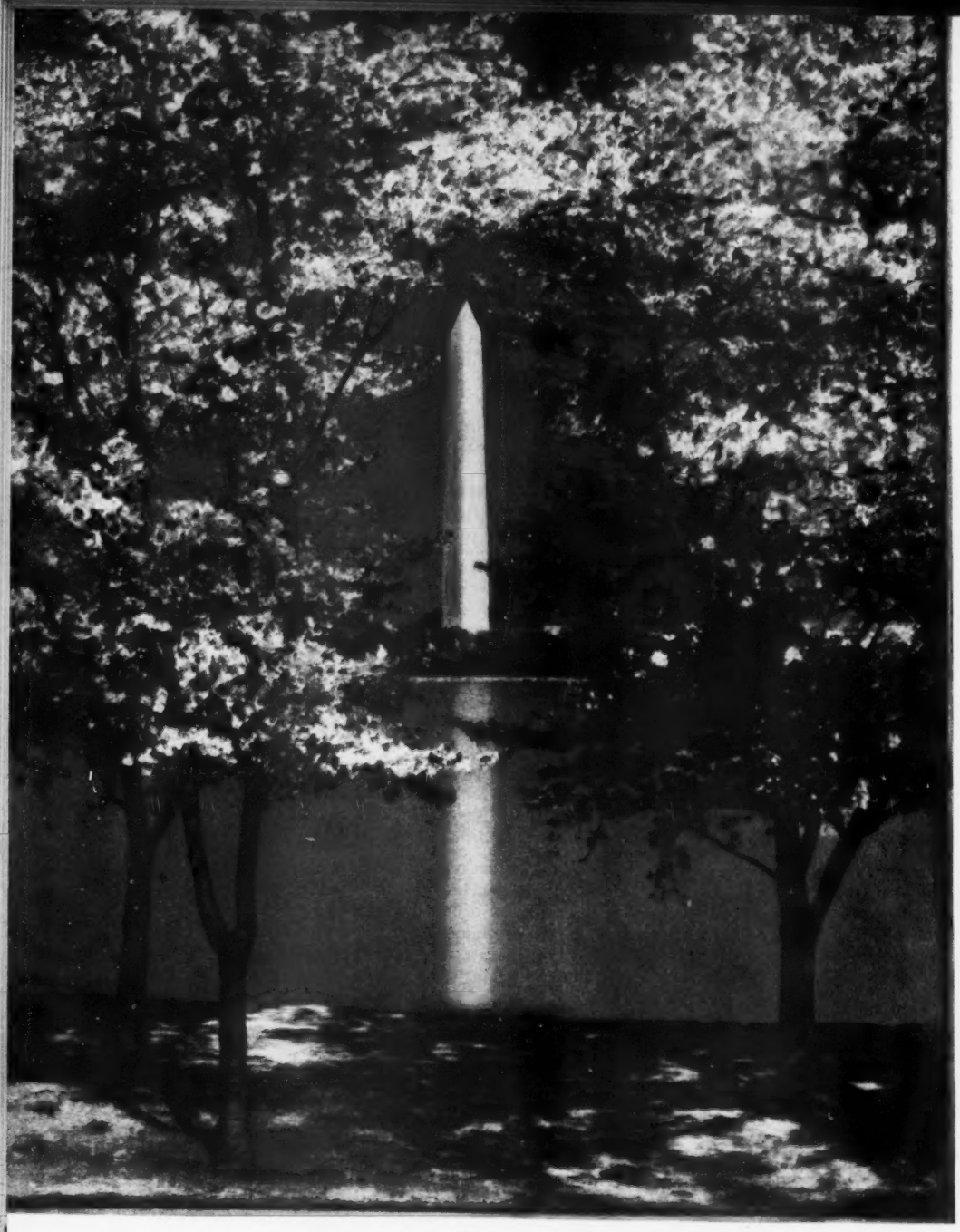
The budgets of the United States and Great Britain were announced on the same date recently. . . . They make a rather interesting comparison: . . .

	United States	*Great Britain*
Revenues	$6,906,000,000	$4,239,750,000
Expenditures	7,324,000,000	4,314,240,000
Deficit	418,000,000	74,490,000

The figures don't show that Great Britain has had a balanced budget for the past two years . . . that the United States has had a deficit for five straight years. . . . Neither does the British figure take into account the recommended income tax increase to 25 percent which will produce $75,000,000 and again balance the budget. . . .

Between the Social Security Board and the National Labor Relations Board an employer nowadays had better turn his factory over to his employes and spend his time in Washington . . . keeping abreast of the rulings. . . .

One of the great enigmas of history is going to be a rational explanation of why a country borrowed money to buy gold which it stored away in an armored cellar, "sterilized" so as officially to be as valueless as the steel which surrounds it. . . .



Wheels of Government

As viewed by A. W. Dickinson of the American Mining Congress.

WHILE the legislative log-jam continued throughout the month of April and is still hung on the Supreme Court issue, there have been happenings of interest and importance to mining. The Guffey Act, known as the Bituminous Coal Act of 1937, has become law. The Vinson Stream Pollution Bill has been passed by the House of Representatives and is now subject to Senate action. The Supreme Court handed down five long awaited decisions on the National Labor Relations Act (Wagner Act) cases and other lesser legislative and federal agency and departmental decisions and rulings gave greater interest to April than to the preceding months of the 75th session of the Congress.

After prolonged hearings, the Committee on the Judiciary of the Senate is preparing to go into executive session to consider the disposition of the President's Bill to enlarge the Supreme Court and the lesser Federal Judiciary. Speculation as to the outcome of the committee's deliberations seems to point to the reporting of a bill which will provide for an addition of two Justices to the Supreme Court. There are many proposals for constitutional amendments which would change the present picture, but by many, such a method is criticized as being too slow in accomplishing the desired ends. In the meantime, we have had the enactment of a provision of law introduced by Chairman Summers (Dem., Tex.), of the Committee on the Judiciary of the House of Representatives which provides that Justices of the Supreme Court may retire on salary and may, thereafter, if they so desire, and if called upon by the Chief Justice, perform judicial duties in any judicial circuit. There is another bill by Chairman Sumners which has passed the House and which includes

some of the features of the President's plan. This bill requires that when constitutional questions arise in law suits, the presiding Judge, at his discretion, shall immediately notify the Attorney General, who will then be permitted to intervene in the case as an equal with the litigants, with the right to present testimony. In cases where District Judges have declared laws passed by Congress to be unconstitutional, the Attorney General may appeal directly to the Supreme Court.

The Sumners' Bills accomplished a material part of the intention of the President's Bill. Congress at all times has, and has had in the past, the power to establish additional district and appellate courts and the judges therefor. With these facts in mind and realizing the legislative battle which would be precipitated if the President's Bill is reported in its original form, the Senate Committee on the Judiciary, within which in itself there is a very definite difference of opinion, may report a greatly modified bill. This would pave the way for earlier consideration of the measures which the administration is expected to send to the Capitol and for an adjournment of the present session of Congress at an earlier date than that now forecast by observers who, at the present time, think that Congress will not go home before September.

An important factor in the legislation affecting the Supreme Court lies in the decisions handed down by that body during the past month in cases arising under the Washington Minimum Wage Law, the Railway Labor Act and the National Labor Relations Act.

In upholding a State Minimum Wage Law for women, enacted by the State of Washington, the court reversed its previous decision which had declared invalid the New York Minimum Wage Law. This opens a wide field for wage and hour legislation by the states which could, and in the long run would, accomplish the objectives which in recent years have been sought through Federal enactment. In upholding the Railway Labor Act case, the court held that railroad managements must treat with authorized representatives of a majority of their employes.

The decisions in the five cases arising under the National Labor Relations Act of 1935 and more particularly in three of the five cases, came as a complete surprise to the country. These cases were:

Associated Press
Washington, Virginia & Maryland Coach Company
Jones & Laughlin Steel Corporation
Friedman-Harry Marks Clothing Company
Freuhauf Trailer Company

In the last three cases, the Supreme Court had under consideration cases from circuit courts in which the National Labor Relations Board was endeavoring to enforce, (cease and desist) orders against the corporations under the unfair labor practice provisions of the Act. In these cases the board had ordered the employer to reinstate the employes discharged, with compensation for all time lost. In the Jones & Laughlin case, the court found the company the fourth largest producer of steel in the United States, with 19 subsidiaries, making it a completely integrated enterprise, operating mines, quarries and transportation facilities by land and water in many states, and manufacturing and distributing a diversified line of steel and pig iron. In effect, the court found the acts which directly threaten to *burden or obstruct* interstate commerce are within the reach of congressional authority and the fact that they grow out of labor disputes does not place them beyond the reach of such authority. In thus upholding the National Labor Relations Act, the court has to a material extent removed the basis for the many charges which have been made that "advancement" in the development of a code of labor law in the United States was being obstructed by our Supreme Judiciary.

Late in the month came the sharp economy message of the President, in his restatement of the Budget situation. Request was made for an appropriation of $1,500,000,000 for recovery and relief for the fiscal year 1938. The message carried a strong note of a warning against continued heavy federal spending and referred to the upset Budget situation brought about by over-estimates of anticipated revenue. The statement was made that the revenue of 1937 had fallen $600,000,000 under the anticipated returns. The President and the Administration spokesmen in the House and Senate warned the members of Congress and the people pointedly against excessive expenditure and the President called for retrenchment during the remainder of the present fiscal year and in the appropriation bills for the coming year.

Such a situation leads inevitably to the consideration of tax policies. In this regard the message said,

> ". . . It has become apparent there is an immediate need for a careful survey of the present tax structure. The Treasury will be prepared by November next, to present to the appropriate committees of the Congress information as to such loop-holes as may exist in the present revenue laws, and suggestions for such new or additional taxes as may be necessary to meet deficiencies, if any, in the revenue producing powers of the present levies."

The Joint Committee on Internal Revenue Taxation made up of the five ranking members of the Committee on Ways and Means of the House of Representatives and the five ranking members of the Committee on Finance of the Senate, is engaged in an exhaustive study of the revenue situation. This committee has a staff which under the able direction of Mr. L. H. Parker, a man of long experience, functions throughout the year in the study of sources of revenue and of the application of the existing revenue laws. The committee also has under consideration at all times, the development of additional sources of revenue. In this connection much has been said lately of the proposals of Representative Lewis of Maryland and Senator LaFollette of Wisconsin to secure revenue by reducing exemptions in the low-bracket incomes. Recent figures show that if the exemptions of married persons are lowered to $1,500 and those of single persons to $500, the additional revenues would only amount to $250,000,000. Such a figure is totally inadequate to meet the increasing pressure for expenditures by the Congress and additional revenue from this source could only be secured by increasing the present rates. There is, of course, the possibility of a manufacturers' excise tax, but both of these methods are extremely distasteful to the members of Congress.

In working toward a solution it is expected that the Joint Committee on Internal Revenue Taxation will endeavor to prepare recommendations for the next session of the Congress and in the course of the work of this committee, hearings may be held at which taxpayers may present their recommendations with reference to the entire question of the revenue laws. At this time it is being stated that there will be no changes in the revenue laws at this session other than the reenactment of the excise and "nuisance" taxes which expire in June and July. Congressional leaders have recently made statements to the effect that there are to be no immediate changes in the undistributed earnings tax on corporations, although it is realized by everyone that this is an improper form of taxation and that it is extremely harmful to developing and expanding enterprises and to corporations which desire to retire outstanding indebtedness.

Important to mineral producers is a ruling contained in Memorandum No. 17760 by the office of the General Counsel of the Bureau of Internal Revenue and carried in Internal Revenue Bulletin No. 15 under date of April 12. This affects the basis for depletion and depreciation in the computation for gain or loss and reads in part:

> "In computing gain or loss under the Revenue Act of 1936, the combined basis for depletion and depreciation of improved mineral property may not be reduced by setting off against the basis of the depreciable property the amount by which the allowed percentage depletion exceeds the basis of the depletable property.
>
> "In computing the depreciation allowance for physical equipment for mineral property, with respect to which percentage depletion has been allowed in an amount in excess of the cost or other basis, the excess of percentage depletion allowed may not be applied against the remaining cost of the depreciable assets.
>
> "Since the provisions of the Revenue Acts of 1932 and 1934 are practically identical with those discussed above,

(*Concluded on page* 91)

Mechanization Trends

Reports of Coal Operators Committees

Mechanized Loading In West Virginia

THE mechanization of coal loading in the Southern Appalachian field probably began about 44 years ago in experimental work at the mines of the Pocahontas Fuel Company, which later resulted in the development of the Jones Coloder. Then followed a long period of comparative inactivity until 1910 when an era of widespread interest in mechanized loading was evidenced by experiments with loading machines, entry drivers and hand loading on conveyors. By the year 1923 a number of installations had been developed to the point of fairly successful operations.

This same movement was going on in the other coal fields of the United States, but the Southern Appalachian Region led in mechanically mined production until about 1926. The lead was then taken and has subsequently been held by Central and Western States which found mechanization a necessary supplement to high wage scales. Recently, however, new interest in mechanical loading has been revived in the Southern Appalachian field due to the upward trend of wage rates and by a realization that an intensive effort must be made to achieve production costs that will successfully combat the inroads of other fuels. Some idea of the extent that recent developments have reached in this section of the country can be gained by considering the trend of mechanization in West Virginia as revealed by the production records furnished by the State Department of Mines.

Mechanization Advances in West Virginia

The accompanying graph shows the number of tons of coal loaded by mobile loaders and by hand loading on conveyors, by months, for the year 1936.

Loaders and conveyors produced 8,702,649 tons as compared with 2,059,322 tons in 1935. This progress is reflected in a 430 percent increase over the previous year in production loaded with mobile loaders and a 173 percent increase in production loaded by hand on conveyors.

Mobile Loaders

About 55 percent of the mobile loaders sold during 1936 in West Virginia went to the southern part of the state. Operations are scattered through a number of seams having a wide variance of conditions. The greatest number of machines operate in a seam slightly over 6 feet thick which has a slate band near the center running from 6 to 20 inches in thickness. Aside from this middle slate, mining conditions are generally favorable for mobile loading.

At one operation where only the top bench of the seam mentioned above is mined it averages about 48 inches in thickness. Here an entire room entry section is mechanized with an entry belt conveyor, chain room conveyors and mobile loaders at the faces.

One mine in a comparatively clean seam about 48 inches thick transports the coal from the mobile loaders to the tipple by means of chain and belt conveyors. Other installations in the southern section are in seams from 4 to 10 feet thick with a wide variety of roof control and general operating conditions.

The loaders in the northern part of the state are practically all in the Pittsburgh seam which averages about 6 feet in thickness. This seam has a drawslate from 6 to 12 inches thick overlain by a variable thickness of shale under a main sandstone strata. Since the shales weather quickly when the drawslate falls it is general practice to leave roof coal.

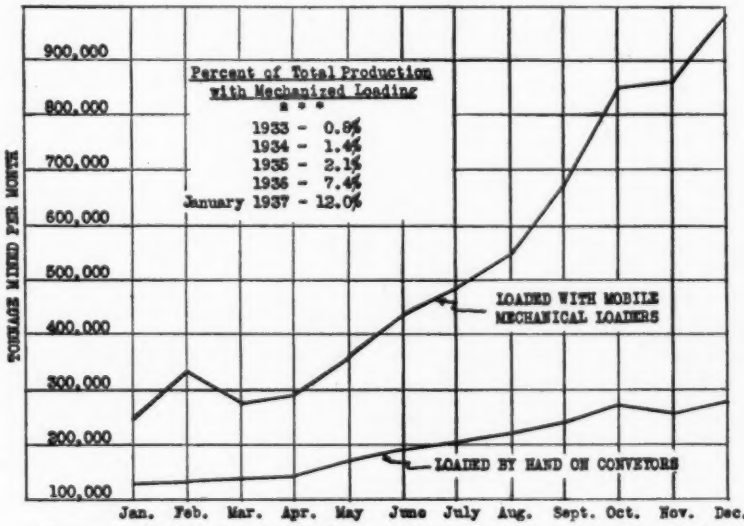
Conveyors

Eighty-seven percent of the conveyors sold in the state during 1936 were installed in the southern fields. They went principally into room and pillar operations in thin seams. While general practice has consisted of driving rooms up to 40 or 50 feet in width several installations are exceeding this and there is at least one successful long face conveyor layout.

Operation in single units is most general but there have been some interesting developments in multiple unit systems. Further progress in this direction is expected as experience in this type of mining becomes more widespread.

Conclusions

Unless unforeseen conditions should develop to block the path of further progress, this year should witness exceptional advances in mechanization. Although installations, for a time, were confined to those seams with better operating conditions, it is now evident that the extraction of coal whether it be high or low, clean or dirty, with good top or bad, can be facilitated by some adaption of the methods made possible by loaders or conveyors.—*Submitted by P. D. McMurrer, Assistant Mining Engineer, The American Mining Congress.*



Increase of Mechanized Loading in West Virginia in the Year 1936

Conveyor Mining With A Single Unit

THIS report submitted by the District Committee of Central West Virginia, illustrates the use of the standard time study form recommended by the National Project Committee on Conveyor Mining. The figures plotted are taken from an actual operation, and illustrate how a time study can determine where operating inefficiencies occur. This particular study has been selected because it shows that the delays in this operation can be corrected and production increased accordingly. The following analysis is submitted to bring out these points.

It will be noted that during this 7 hour shift 2 clean-ups were made producing 11 cars or approximately 30 tons. Four men were employed, which makes an average of 7½ tons per man. However, it will be noted that approximately 3 cuts were made which is an equivalent to about 2½ complete cycles. Two complete cycles were made in about 6 hours —starting with the loading at 10 minutes past the second hour and completing the second cycle at 30 minutes past the eighth hour. Subtracting 30 minutes for lunch period gives an actual working time of about 6 hours.

On this basis, 30 tons were produced in 6 hours—an average of 5 tons per hour or 35 tons in a 7-hour shift. This is an actual production rate of almost 9 tons per man shift and not 7½ tons as the first glance might indicate.

The actual production of 9 tons per man shift is again not the true rate at which this crew was performing because of the fact that avoidable delays have occurred which can be eliminated by the management. For example during the second hour a 13-minute interruption occurred in the loading operation due to car changing at the loading point with a loss of 35 man minutes. At the beginning of the shift only two shots could be fired because the cutting machine could not be pulled from the cut due to a bad roof condition and timbers near the face. This again caused an interruption in the loading during the third hour when the machine was pulled from the cut across the face and the corner shot fired. A loss of at least 60 man minutes occurred here. Loading was delayed at the beginning of the sixth hour by waiting on cars with a loss of approximately 40 man minutes. Operations were slowed down during the day due to poor power.

The correction of operating inefficiencies noted above should easily allow this crew to make three clean-ups a day producing about 45 tons, or approximately 11 tons per man. This is evident from the fact that the last cycle shown on the time study began at 10 minutes past the sixth hour and was completed at the end of the shift—an elapsed time of two hours and twenty minutes which included incidental operating delays that can be expected in any operation.—*Submitted by District Committee of Central West Virginia.*

Coal Operators Committees

The American Mining Congress

Conveyor Time Study Form

MEN	1ST HOUR	2ND HOUR	3RD HOUR	4TH HOUR	5TH HOUR	6TH HOUR	7TH HOUR	8TH HOUR
1	C 30 · D 14 · E 16	I 10 · L 31 · M 13	L 31 · M 35	C 60	F 25	I 15 · L 55	M 10 · C 60	E 15
2	C 30 · T 15 · F 13	I 12 · L 31 · M 13	L 31 · F 15 · L 20	M 5 · L 13 · T 3 · K 39	LUNCH 30 Min. · E 25	I 15 · L 55	M 10 · L 10 · C 50	E 15
3	M 30 · D 14 · E 16	I 10 · L 31 · M 9 · T 4	L 31 · M 15 · L 40	T 7 · M 8 · D 25	E 25	I 15 · L 55	M 10 · L 10 · K 30	D 25 · F 10
4	M 30 · D 14 · K 16	I 10 · H 75	M 15 · H 50	D 30	K 20	I 20 · H 80	E 10 · D 22	K 18 · F 10
5								
6		Derby - Waiting on Cars	Derby - Moving machine & firing 3 Cut Shot	6 Cars Loaded				
7						Derby - Waiting on Cars	Picking down right coal · 5 Cars Loaded	
8								

SUMMARY OF TIME STUDY		
KEY TO CHART	MAN MINUTES	PERCENT
C - CUTTING	230	13.7
K - CLEANING KERF	123	7.3
D - DRILLING	144	8.6
T - TAMPING - FIRING	73	4.3
T - TIMBERING	29	1.7
B - BRUSHING - TOP, BOTTOM		26.4
P - PICKING IMPURITIES		12.2
L - LOADING AT FACE	444	26.4
H - CAR TRIMMING	205	12.2
S - HANDLING SUPPLIES		
E - EXTENDING CONVEYORS	122	7.3
R - REPAIRS		
M - MISCELLANEOUS	203	12.3
I - IDLE	107	6.4
TOTAL	1680	100.0

GENERAL NOTES ON OPERATION

TONS PRODUCED DURING TIME STUDY 30

TYPE CUTTING MACHINE Shortwall

DEPTH CUT 6' COMBED OR LOADED loaded

TYPE DRILL Electric hand

NO. HOLES 3 per Cut TYPE EXPLOSIVE Perm.

NO. TIMBERS

THICKNESS COMBED OR LOADED

THICKNESS OF IMPURITIES

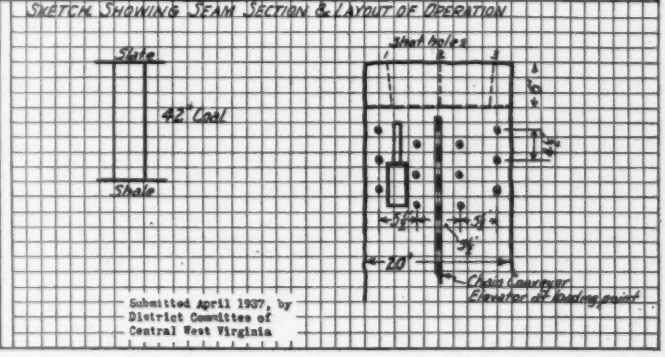
NUMBER OF CLEANERS

TYPE HOIST Electric CAR CAPY. 2.7

TYPE CONVEYOR Chain

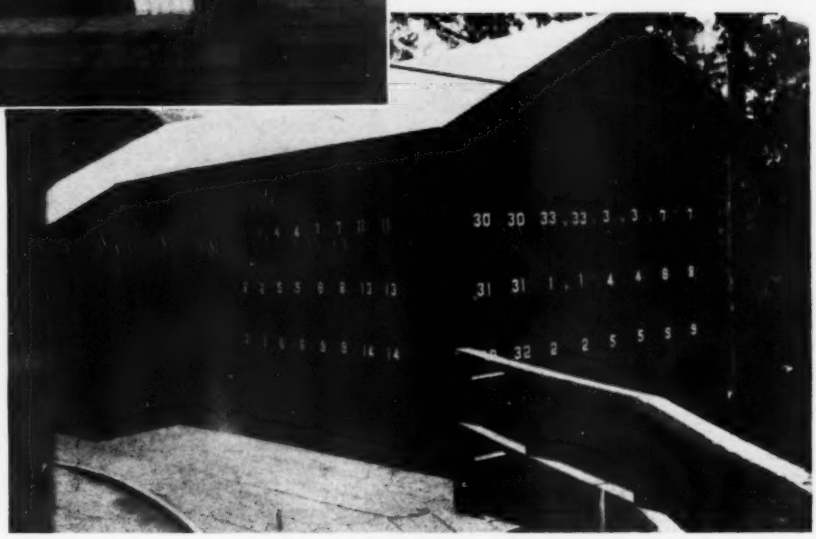
CENTRAL TONNAGE

SKETCH SHOWING SEAM SECTION & LAYOUT OF OPERATION



Submitted April 1937, by District Committee of Central West Virginia

Handling Lubricating Oils Underground



By JOHN M. LINDLEY*

Main Storage

IT is very important that barrels of oil and grease be stored properly where several mines are to be serviced from a central storage. They should be stored either in an enclosed building or an enclosed platform with a roof sufficient to protect them from the weather and prevent water from getting into the oil. The barrels should be stored on end to prevent rolling and leakage of oil from them. Each grade of oil or grease should be stored separately and a notice posted, showing where each grade is stored. This is to save time reading and trying to locate the kind wanted and moving barrels around from one place to another to get the one required.

The floors of all storage rooms for barrels of oil or grease should be a truck or a floor of box car height, both for full and empty barrels, to avoid waste of time and danger of injury from lifting. When transporting barrels of oil or grease by truck, they should be stood on end, with the bung end upright, and they should be properly secured to prevent any danger of turning over and rolling off the truck.

Dispensation

Sometimes, in connection with a main storage, it is necessary to dispense oil and grease for use in central machine shops, carpenter shops, and other shops using oil and grease. In this case the oil and grease to be dispensed should be kept in a separate enclosed building. The barrels of oil should be kept in suitable racks which have the proper faucets, in order that oil may be obtained easily with little or no spillage. A better plan would be to have tanks set in the ground and the oil emptied from the barrels into these tanks. Such tanks have arrangements whereby the required amount of oil can be drawn. Should there be any leakage, it will drip right back into the tank through a fine screen. Thus time and probable waste would be saved because it is sometimes difficult to shut off the oil at the right moment if oil racks and faucets were used. Where racks are used, drip pans should be employed to catch the waste or overflow. The oil from the drip pans should not be put back into the barrels without first being strained, as the drip pans undoubtedly collect dust and grit. There should be plenty of light in such a building.

In winter time, arrangements should be made whereby the oil can be kept at such a temperature that it will run freely.

At the Mines

As not more than a day's supply of oil should be kept in the mine, it is necessary to have some means of taking care of it after it reaches the mine. It is a good plan to have an oil house built to hold a sufficient number of barrels of the kind of oil or grease used. The barrels of oil may be stood on end and a pump inserted in the bung hole, or tanks may be inserted in the ground and the oil emptied into the tanks. A very good plan, when building an oil house, is to build individual lockers for each motor crew, machine crew, and pumpmen. Each lock should have three keys, one to be given to each individual using a locker, one kept in the oil house as an extra one in case one gets lost, and one given to the chief electrician, in case the regular motorman or the machineman should fail to report for duty.

At hand-loading mines a pint can is usually sufficient for a motorman. A

* Division Safety Engineer, The Koppers Coal Company.

gallon can for a machineman. These cans are taken into the mine by the motormen and machinemen at the beginning of their shift and returned to the oil house and placed in their respective lockers when the shift is ended. Each is refilled, with the proper oil, after every shift, by a shop electrician or other person authorized to do so by the chief electrician.

The lockers are useful for other purposes. The motorman or machineman needing small supplies may fill out form No. 1 (see Form No. 1) and leave it in his locker, together with his oil can. The same man that fills the oil cans can get the supplies listed from one to seven and supplies listed as numbers eleven and twelve on Form No. 1. The supplies are put in the locker along with the can of oil. By doing this a good deal of confusion is eliminated at the beginning of the shift. One man can be held responsible for all oil and grease used. He will be responsible for keeping the oil house clean. This will help to eliminate waste.

Another form could be used (see Form No. 2) for keeping check on oil and grease used, the number of rooms and headings cut, number of cars hauled, amount of oil used by pumps, oil on hand, oil received, and balance on hand.

For conveyor mining or in mines where coal-loading machines are used, a different system of lubrication would probably be needed.

Lubrication

One good method of greasing motor axles is to equip the axle caps with suitable grease fittings and a small pipe. The pipe should extend from the fittings into the axle cap to within one-half inch of the axle. So that new grease put in goes directly to the axle and is then forced on and up into a reservoir which holds about one and one-half pounds and which is kept filled at all times. The grease from this reservoir is always kept pressing slightly on the axle. This greasing should be done by one or more men, according to the number of motors in use, supervised by the chief electrician. A suitable grease must be used for this purpose.

Locomotives are to be equipped with gear cases which should be filled with a sufficient amount of suitable cup grease and journal oil mixed. This also should be taken care of by the shop men responsible to the chief electrician.

All ball bearings on locomotives and mining machines should be cleaned and hand packed with a suitable grease, which also must be overseen by the chief electrician. This should be done at stated intervals and a dated record kept of the time of each greasing and packing.

Journal boxes should be cleaned and packed with wool elastic yarn waste and kept saturated with a good grade of journal oil.

All locomotives should be checked daily by electricians. All inside machinery should be checked at least every 24 hours.

All other machinery, such as pumps and fans, should be checked every 24 hours.

Mine Cars

If equipped with roller bearings, mine cars should be inspected periodically. To do this, any car should be taken off the road and examined. The bearings should be taken out, cleaned, and examined for wear. This will tell whether the right kind of lubricant is being used or if it lasts and holds the body it should.

Education

All persons handling oil should be taught how to store it and keep water, dirt, and dust from getting into tanks or barrels when "breathing" takes place, due to variations in temperature.

They should be taught to consider the fire hazard at all times.

Lubrication costs can be considerably reduced and greater safety obtained, not only from fire but from dangers of stepping and falling, if all men whose duty it is to lubricate moving parts could be taught to lubricate efficiently. One often sees cables saturated with oil, oil running down the sides of machinery, platforms under moving machinery saturated with oil, and wads of grease lying alongside the tracks and alongside machinery.

Whether hand, conveyor, or machine loading is employed, lubrication control should not be neglected to the point where lubrications are wasted by dousing at one time followed by a long period during which no lubrication is applied.

Form No. 1

MOTORMAN'S AND MACHINEMAN'S ORDER FOR SUPPLIES

Date.....

Electric Shop:

Please issue the following supplies to Motor Machine No.....

	Amount	Size and Kind
Tape		
Splices		
Oil		
Fuse Links		
Fuse Cartridges		
Lamp Globes		
Nip Fuses		
Tail Ropes		
Feed Ropes		
Jack Pipes		
Trolley Wheels		
Trolley Slides		

....

Name of Operator Foreman

Form No. 2

Mch. No.	Pounds Grease	Pints Oil	Places Cut Hdgs.	Places Cut Rooms	Remarks
1					
2					
3					
4					
5					
Motor No.			**Cars Hauled Coal**	**Cars Hauled Slate**	
1					
2					
3					
4					
5					
Pumps			Oil on Hand Pts.		Grease on Hand Pds.
Fans			Oil Received Pts.		Grease Received Pds.
Conveyors			Bal. on Hand Pts.		Bal. on Hand Pds.
Total Used					

According to an article in the *Montana Standard*, of Butte, the payroll of the Anaconda Copper Mining Company in Montana in March, 1937, was $2,306,000 against $786,000 in March, 1934. In the latter month 5,384 men were working part time against 13,037 men working full time in March, 1937. In March, 1934, a total of 154,069 shifts were worked compared with 356,005 shifts worked in the same month in the current year. Three years ago the day's pay rate for miners was $4.25, today it is $6. In 1934 Anaconda was producing copper in Montana at the rate of 8,000,000 pounds per month compared with over 25,000,000 pounds current monthly production.

INSPECTION and SAFETY

of the Island Creek Properties

A. J. BARTLETT*

ISLAND CREEK conditions are generally referred to as ideal, yet, like all other properties, we have to contend with all known hazards in coal mining. The hardest of these hazards to combat is, we find, the human element.

The basic thought in the minds of the management of these properties is to produce coal with the utmost safety, and it has impressed upon its supervisory force that it does not want a ton of coal unless it can be produced safely.

This company has instituted a mine inspection department, which reports direct to the general manager, and all matters pertaining to safety come under the direction of the inspection department. Through the medium of the inspection department, the management is kept in touch with the actual conditions existing in general at all mines. Inspections are made regularly and continuously—that is, at all times while the mines are in operation, some sections of the various mines are being examined. These inspections cover all active and inactive workings. Miners are contacted in their working places and other employes at their respective work. A thorough check is made to see that the State Mining Laws are complied with and that company safety rules are being observed. Night shifts receive the same attention as day shifts. All violations and dangerous practices are brought to the attention of the plant supervisory force with suggestions and recommendations; major hazards of emergency nature are taken up immediately with the management. Periodical inspections are also made of all tipples, preparation plants, dumping and hoisting equipment, etc., to see that all machinery is properly guarded, walkways and platforms properly fenced and conditions of equipment and mechanical defects are also reported.

Reports of inspections are written in letter form and in such a manner as to give the management a picture of the existing conditions at the time of inspection. Copies of inspection reports are forwarded to the superintendents with the general manager's comments.

* Chief Mining Inspector.

Outside Display Cabinet with continuous rotating safety message and accident illustration.

It has been said "There is nothing under God's Heaven that justifies your creation or your citizenship but this gospel . . . 'That the next greatest thing to creating a life is to save a life.'" The management realizes its responsibility and duty toward its employes in safeguarding life and limbs and believes the time to avoid an accident is before it happens. The supervisory force is instructed to do everything possible to make safe and competent workmen through instruction, advice and individual encouragement, and to set the example in observing all safety rules. An adequate force of section foremen is maintained at all mines so that all men can be visited at least twice daily in their working places and their safety properly supervised.

The greatest asset in any accident prevention program is "SAFETY-MINDED OFFICIALS AND WORKMEN." This can only be accomplished by perpetual training and education. To bring this about everyone must be constantly reminded that whatever he does must be done in the safe way. "SAFETY" is not a job that can be done today and forgotten tomorrow.

Like all well-organized movements for service to mankind and betterment of conditions, a safety program needs a certain amount of advertising and should adopt a suitable slogan pertaining to its aims and purposes. In January, 1936, we decided to adopt the slogan "BE CAREFUL" to be used by all of our employes. This slogan was incorporated in our safety rules, which state: "It shall be the duty of everyone in the employ of this company when approached or approaching anyone to call out 'BE CAREFUL.'" In adopting this slogan we believed that if our employes would say "BE CAREFUL" and could hear it said several times during the day—in fact, if they were frequently reminded to be careful, they would be more careful in their work. To make this slogan effective took time and patience; all employes had to be educated to the use of it, the proper method and the reasons for using it. Now it is the watchword at all of our mines. For instance, should you visit one of our mines upon reaching the shaft or slope bottom, your attention will be attracted to an electric neon sign in red letters which tells you to "BE CAREFUL." As you travel along the haulways those you meet tell you to "BE CAREFUL" and you answer likewise. When you enter the working place of a miner and he observes your approach he calls out "BE CAREFUL" and then tests the roof and ribs by the vibration method before you approach the face.

There is no definite way of recording the results obtained from the use of this slogan; however, we feel much good has come out of it. Our employes are constantly reminded to "BE CAREFUL"; it carries an element of discipline, tends to closer cooperation between men and management, and is of mutual benefit to the entire organization. In addition

to the verbal use of our slogan, attractive safety placards are posted at conspicuous places inside and outside the mines. These show a picture of some familiar accident and the right and wrong way of doing the job. Each poster carries our slogan in large print. We are also installing on the outside at each mine display cabinets which carry a continuous rotating safety message and a scene pertaining to some accident. These displays will, we feel, create additional enthusiasm and cooperation among our employes in the safety program.

There are several ways of putting into effect safety measures: We have found the method of persuasion and instruction most successful, rather than the use of force. It is human nature to take a resentful attitude toward anything we are forced to do. As an example, in January, 1936, we put on a campaign for 100 per cent safety hats. By the method of persuasion, in a few months, the entire group of mines was 100 per cent—both inside and outside. These hats were sold to our employes at cost. We have every reason to believe had we used the method of force we would have met with considerable opposition. Our objective for 1937 is 100 per cent hard-toed shoes at all mines, by the same method. This group of mines has been on electric cap lamps for several years. The management, realizing its responsibility and the possibility of explosions and mine fires, during the year 1936 changed all of its flame safety lamps from key lock to magnetic lock type; equipped an up-to-date mine rescue station; installed mine fire trucks of 40-gallon capacity on the inside of all mines. Two 2½-gallon capacity hand fire extinguishers were installed on all working sections and at other points around the mines.

All working sections are equipped with metal canisters containing stretchers, blankets and first aid supplies.

More thought is being given to adequate rock dusting. Originally, only two rock dusting machines were available for the entire group of mines, but now each mine has its own machine and rock dusting is done regularly.

We believe that all accidents should be reported and insist that the injury, regardless of how slight it may be, be given prompt attention and reported. Accident reports are made in triplicate, showing all details pertaining to the injured person, time accident occurred, nature and extent of injury, exact location where accident happened, statement showing fully how accident happened and whether any time was lost on account of injury. These reports are signed by the foreman for whom the injured person was working. The original report is forwarded to the main office, a copy to the inspection department and a copy retained at the mine office. A copy of the surgeon's report of accident is also furnished the inspection department in all accidents requiring medical attention.

The inspection department keeps an accurate record of all accidents, which are classified as "No Lost Time" and "Lost Time" and as to their respective causes, and are charged to the foreman on whose section the accident occurred. At the end of each month an analysis is made of all accidents reported from each mine. The analysis form on which this record is kept shows the cause for each accident and whether it was "Lost Time" or "No Lost Time" injury, also shows the record of each foreman. The previous, present and to-date record is shown on this form for comparison and you can, from a study of the analysis, tell what your greatest hazards are, where you are having the most accidents and can pick out the foremen who are having too many accidents. This analysis is forwarded to the general manager and a copy to the superintendent. (A specimen of this form is appended.)

(*Concluded on page* 91)

ISLAND CREEK COAL COMPANY

Analysis of All Accidents Reported

Mine No.....

For..... .....193.....

Accidents Reported — Accident Record of Foreman

CAUSES	Previous			Present			To Date		
Inside	No Lost Time	Lost Time	Total	No Lost Time	Lost Time	Total	No Lost Time	Lost Time	Total
Falls of Roof									
" " Ribs and Sides									
Haulage—Derailments									
" —Couplings									
" —All Others									
Explosives									
Electricity									
Hand Tools									
Handling Material									
Mining Machines									
Other Machinery									
Person Falling									
Objects Falling									
Cages, Skips, Etc.									
All Others (Misc.)									
Total Inside									
Outside									
Haulage									
Trucks									
Electricity									
Tipple Machinery									
Other Machinery									
Hand Tools									
Handling Material									
Falls of Persons									
Objects Falling									
R. R. Cars & Equip.									
All Others (Misc.)									
Total Outside									
Grand Total									

Name of Foreman	Previous			Present			To Date		
	No Lost Time	Lost Time	Total	No Lost Time	Lost Time	Total	No Lost Time	Lost Time	Total
Tonnage—Previous									
" —Present									
" —To Date									
Fatalities									
Tons Produced Per Fatality									
" " Per Lost Time Accident									

● Denotes Fatality

Electric Neon Sign in Red Letters at Shaft Bottom.

New Reverberatory Furnace and Waste Heat Boiler Installation, Phelps Dodge Corporation

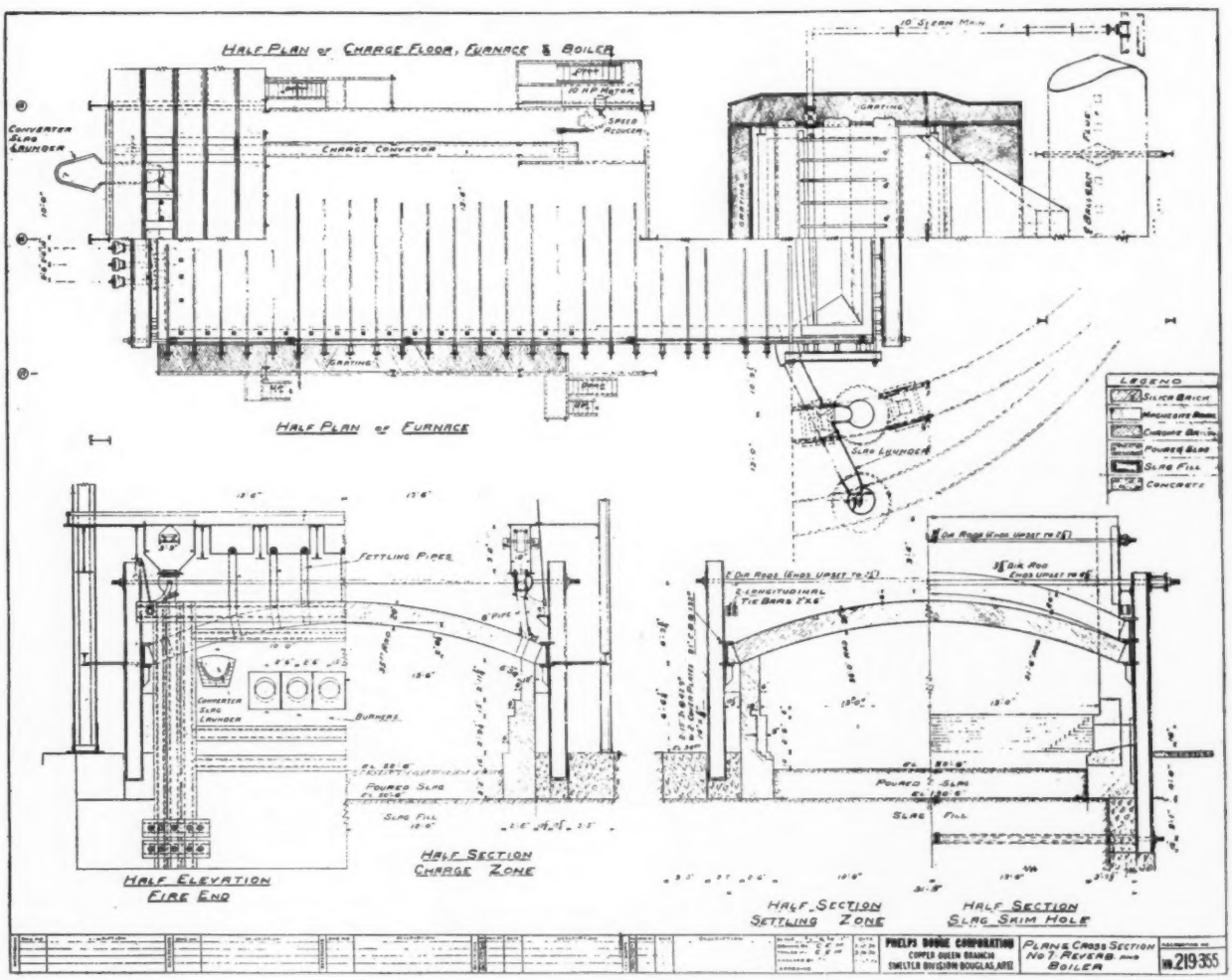
By H. A. CLARK*

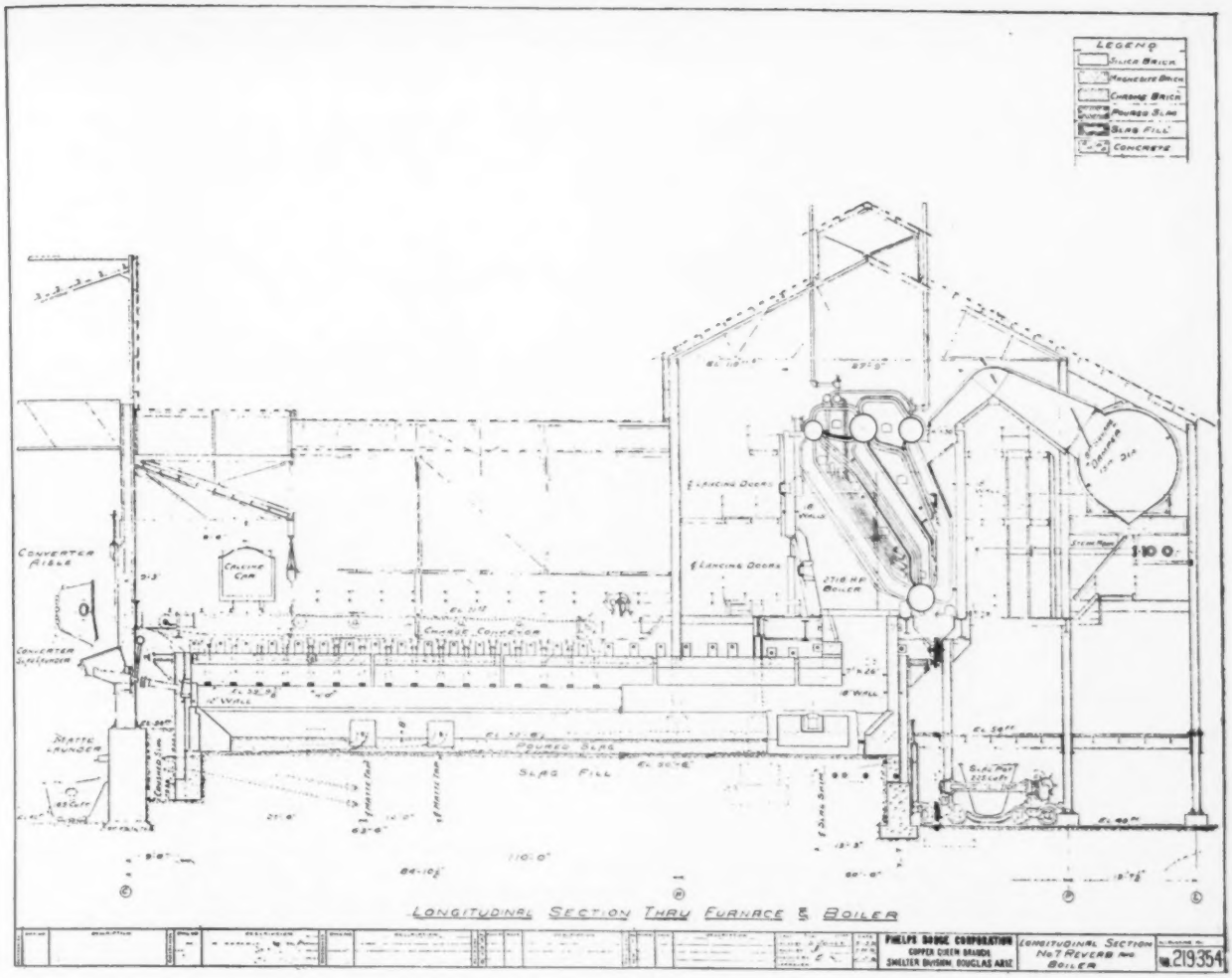
A NEW reverberatory furnace and waste-heat boiler installation was placed in operation during the first part of this year at the Douglas Smelter of the Copper Queen Branch, Phelps Dodge Corporation, Douglas, Ariz. All power produced at the Douglas Smelter is derived from waste heat and power in excess of smelting requirements is transmitted to the Copper Queen Mines, located at Bisbee, Ariz. Under this condition, a high recovery of waste heat is desirable and results in overall savings. The new unit was designed for maximum furnace performance with a high recovery of waste heat.

The furnace-boiler unit is novel in that a single waste-heat boiler is located directly above the outlet of the furnace without dampers of any sort between the furnace and boiler, thus furnace and boiler necessarily operate as one unit. Due to the location of the boiler, furnace gases are delivered to the boiler at the furnace outlet temperature and the heat loss which occurs with the usual long boiler flue connections is eliminated. Steam production is further augmented by radiated heat from the slag bath in the front or flue end of the furnace, which is exposed to the boiler tubes.

Reverberatory Furnace

The reverberatory furnace inside dimensions are 107 ft. 6 in. long and 26 ft. wide at the slag line. There are no restrictions in area at the front end of the furnace and the uptake area is 182 sq. ft. The furnace is constructed of


HALF PLAN of CHARGE FLOOR, FURNACE & BOILER
HALF PLAN of FURNACE
HALF ELEVATION FIRE END
HALF SECTION CHARGE ZONE
HALF SECTION SETTLING ZONE
HALF SECTION SLAG SKIM HOLE
PHELPS DODGE CORPORATION COPPER QUEEN BRANCH SMELTER DIVISION DOUGLAS, ARIZ.
PLAN & CROSS SECTION NO 7 REVERB. and BOILER
NO. 219-355



silica brick with panels of magnesite brick at the slag line in the section of side walls which extends from the charging zone to the front of the furnace. Magnesite brick was also used in the end walls of the furnace. The furnace bottom consists of furnace slag which was poured into the furnace after the side and end walls had been constructed. Steel bindings are of the usual type with buckstays of box-beam construction and box-beam girders across the ends of the furnace, tied with longitudinal eye bars pin connected.

The furnace charge consists of roasted ores and concentrates, which is transported to the reverberatory furnace from the roasters in larry cars on an elevated double track system across and above the firing end of the furnace. The charge is unloaded from the larry car to charge hoppers located on each side of the furnace. Drag chain conveyors and a system of pipes with gates permit distribution of the charge along the side walls in the furnace. The charging zone is 63 ft. long and charge holes are located on 4 ft. centers. No difficulty has been experienced to date with drag chain conveyors for the conveying of the hot calcine charge.

The furnace fuel is natural gas from Jal, N. Mex., containing about 1,080 B.t.u. per cu. ft. The furnace is fired with six gas burners located in the burner end wall. The burners are a modified Surface Combustion Company high pressure type burner firing through refractory burner tunnels. Constant gas pressure is maintained at the burners by means of a pressure regulator and 19.0 lbs. pressure at burners is used at the present time. Combustion air is controlled by adjustments of primary and secondary air shutters on the burners and by manipulation of the furnace draft. Furnace gases are sampled at a point 70 ft. from the burners and gases containing .60 percent excess oxygen give satisfactory results for smelting operations. The location for measuring the furnace draft is 81 ft. from the burner end and the draft is normally maintained at .02 in. water.

The slag skim is located in the side wall 11 ft. 6 in. from the front wall, or flue end of the furnace (see longitudinal section through furnace) and no difficulties have been encountered since the furnace was placed in operation, with fouled slags or chilled bath in this location. Slag launder and slag track system arrangement provides for continuous skimming. Slag pots of 225 cu. ft. capacity are used for transporting slag from furnace to dump. The matte tap holes are located in the side wall of the furnace, being 27 ft. 6 in. and 39 ft. 6 in., respectively, from the burner end of the furnace. Converter slag is introduced by means of a launder through the burner wall of the furnace.

Waste-Heat Boiler

The waste-heat boiler installation consists of one Babcock & Willcox Company Stirling Boiler containing 27,186 sq. ft. of heating surface. The boiler is designed for 400 lbs. gauge steam pressure and is equipped with pendant type superheater. The boiler is now operating at 165 lbs. steam pressure and steam temperature of 492 degrees F. Two-thirds of the superheater tubes were omitted in the original installation, but when power plant equipment permits the use of higher pressure steam, the additional tubes will be installed and the ultimate operation will be at 400 lbs. pressure with steam temperature 644 degrees F.

(*Concluded on page* 88)

* Manager, Copper Queen Branch, Smelter Division.

Water Control and Disposal at Phelps Dodge Corporation, Copper Queen Branch

By GEO. B. LYMAN*

THE United States Geological Survey (Bisbee Folio No. 112, published in 1903) describes the climate of the Warren Mining District as one of pronounced, though not extreme, aridity. Since that time, however, the depth of active mining operations has been increased about two and a quarter times, with corresponding horizontal expansion. The Junction Shaft, now 2,727 feet deep, has, during this period, gradually developed into a perennial spring of considerable size.

During the past 16 years (1920-1935) slightly more than 32,500,000,000 gallons of water have been pumped to surface in the district. Of this, 24,000,000,000 have been from the Junction Shaft, 7,000,000,000 from the Calumet and Cochise Shaft, and 1,500,000,000 from the Czar Shaft.

On the surface, the water is conveyed by flume for a distance of a mile from the Junction Shaft to prevent re-entrance into the mine and permit of discharge into a natural drainage channel. Two miles below this point the mine water, together with surface waters tributary to the channel, is diverted by dams and impounded behind dikes which provide an evaporation area of about 120 acres for its disposal within company property boundaries.

Sources of Water

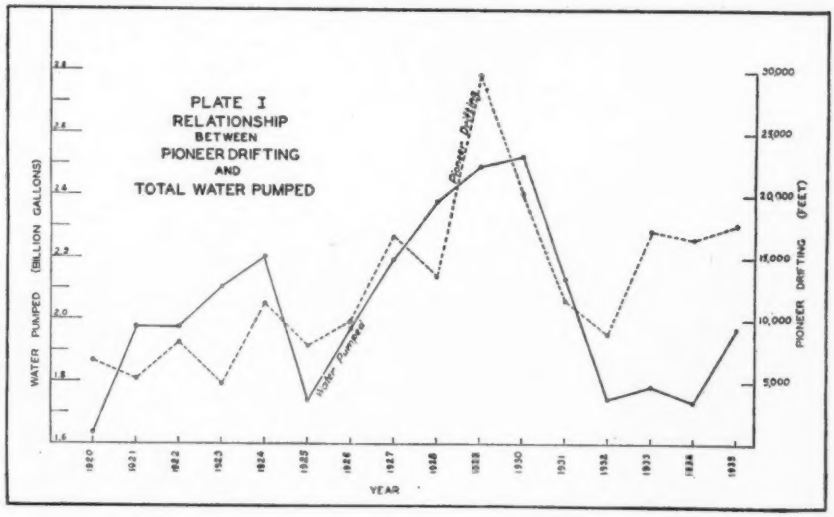
For the purpose of discussion, the water may be considered under the two headings of (1) Surface Water and (2) Underground Water.

Surface Water. As shown on the accompanying surface map, the major water shed of the district comprises an area of about nine square miles, draining into Mule Creek which, in general, follows the line of the Dividend Fault, the major geologic structural feature that forms the northeasterly boundary of the mining area. Although dry throughout the greater part of the year, large quantities of water pass through the creek during the summer rainy season. Rainfall is extremely heavy for short periods, the record in recent years being 6.4 in. in 43 hours, in September, 1926.

Extending southwesterly from Mule Creek, between points opposite the Czar and Junction Shafts, is a limestone area of general fracturing, the irregular boundary of which conforms closely to underground mining limits within the major ore zone. This fracturing varies from occasional widely spaced cracks to zones of intensive breaking and subsidence. Along the southwesterly edge of Mule Creek, east of the Holbrook Shaft, a mass of unbroken granite porphyry and conglomerate acts as a water barrier between the creek and the crushed area. Some of the water falling on this area is conveyed by flumes to the natural drainage, but most of it sinks into the ground and ultimately reaches the Junction Shaft pumps.

Within the major zone of subsidence are two small areas of intensive fracturing, both caused by mining at shallow depths. The accompanying map of the Queen Hill Block shows one of these zones near the Czar Shaft. Extensive stoping under and adjacent to Mule Creek was carried to within 50 feet of the surface in this area, and represents some of the earliest mining in the camp. Holes due to subsidence occasionally appear in the creek bed. Volumes of water as great as 400,000 gallons per minute have been observed at this point, which is one of real hazard during the rainy season. To guard against large flows of water gaining direct access to the mine workings, the stream bed has been narrowed by large quantities of waste rock dumped along each bank which provide material for filling possible holes, either manually or by mechanical action of the stream itself.

The second crushed zone, noted on the surface map as Southeast Extension, is the subsidence area overlying block caving and top slice stopes. A part of the surface drainage is flumed across this area and reaches Mule Creek. Some



* Chief Engineer.

water, however, percolates downward through the old mine workings and goes to the Junction pumps.

Sacramento Pit, originally steam shoveled but completed by mining through glory hole raises from below, is a third source of surface water. The glory hole raises have been blasted, or filled in, thus preventing a sudden rush of water into the mine. Slow percolation, however, adds its quota during the rainy season.

Underground Water. The general trend of the orebodies, from the surface outcrop near the Czar Shaft southeastward, is to deeper and deeper levels. Steady pumping has gradually lowered the water level within the operating area west of the Campbell Shaft. To the east of the Campbell Shaft, however (in the Warren Shaft) underground water, at cessation of pumping, rose to within 1,000 feet of the surface.

Heavy flows of water have been encountered from about the 800 level downward to the 2,700 level in the Junction Shaft, on the 1,500 level in the Briggs Shaft, and from the 1,800 (the highest extensive level) to the 2,200 level in the Warren and Calumet and Cochise Shafts. In regular mine development work, these flows are generally cut in minor fractures within fault zones, rather than in major faults proper, the latter being, as a rule, sealed with gouge or porphyry. Persistent following of a major fault, however, has produced such flows on entering an open fracture.

Plate I shows the relationship between footage of "pioneer" drifting and gallonage pumped during the 16 years 1920 to 1935. It portrays clearly the water conditions to be expected as development progresses eastward from the Campbell Shaft and to deeper levels.

Underground Water Control

Water is the greatest hazard incident to deep level development, as experience has shown that flows as high as 6,000 gallons per minute may be encountered without warning, even though pilot drill

holes are driven ahead of pioneer drift faces. For this reason, steel bulkhead doors are installed in all drifts driven into undeveloped areas, particularly those near major fault zones, and those east of the Campbell Shaft. Such doors are also placed on new lower levels as soon as these have advanced far enough to provide shaft station room and are in rock solid enough for the purpose. The most recent of the doors is designed to withstand 400 pounds pressure per square inch. The highest pressure actually observed has been 267 pounds per square inch. Doors are set in concrete, and openings are usually 4 feet wide by 7 feet high.

Protection Against Surface Water

Although the amount of water entering the mine is restricted on the surface as far as possible, there is always the danger of unforeseeable subsidence over shallow mining in the Czar-Holbrook area and of cloudbursts so localized as to concentrate large quantities of water either in the open pit workings or at least within the fracture zones.

In order to protect the main pumping plant at the Junction Shaft and to prevent flooding of the most important producing area, lying between the Junction and Campbell Shafts, a series of bulkheads and doors serve to control the amount of water normally delivered and can be used to impound large volumes in case of emergency by flooding workings of comparatively minor importance.

Starting at the surface at the western end of the district, water from the Czar-Holbrook area and Sacramento Pit flows through old mine workings to the 1,000 level on which, at a point near the Gardner Shaft, it is impounded behind a concrete bulkhead. Normally, the entire flow is drawn through and passes on to the Junction mine. In case of flood, however, 2,400 gallons per minute can be pumped at the Czar Shaft, and the excess impounded behind the bulkhead until the water level rises to the 800 mine level. At this point it will again overflow to old workings and finally reach the Junction 1,500 level. A similar bulkhead here serves to further control it, and in conjunction with wooden water doors on the lower levels, will impound any excess until the entire Sacramento mine from the 1,900 to the 1,700 levels has been flooded. In this manner, storage capacity estimated at from 20,000,000 to 30,000,000 gallons of flood water has been provided.

Surface water entering the mine to the west of Sacramento Pit is also controlled by the above system of doors and bulkheads.

Character of Water

The chemical nature of the mine water of the district varies from a purity suitable for domestic use to that having an acid content that will destroy mine rails and pipes within a few days, and which requires special handling.

Acid Water. Practically all water from west of the Junction Shaft is of this type and contains copper in solution in amounts which vary widely during different seasons of the year.

On account of the corrosive action of this "copper water," ditches must be kept open to prevent destruction of track rails, which are further protected by strewing lime along each side of each rail to neutralize the acid. Pipes are hung to the sides of the drifts about 5 feet above the floor. When exposure to drips cannot be avoided, they are wrapped with 4 or 6-inch friction tape for small jobs, and with muslin drilling followed by anti-corrosive paint on large jobs.

For conveying acid water, other than by ditches, wood pipe or launders with stainless steel nails or bolts or other fittings, or lead piping is used. Pipes through bulkheads are either lead-lined iron, lead, or stainless steel. "Valves" consist of blind flanges which are adjusted to the desired opening.

Two underground precipitation plants are in operation, one on the 1,500 and the other on the 1,800 level of the Junction mine. These plants serve the double purpose of recovering the copper in the water and reducing acidity before it reaches the pumps. The plants are of wood, stainless steel, and lead construction.

Pumping

Of the three shafts through which most of the water from the mines of the district has been pumped, the Junction has handled by far the bulk of it, its volume having been exceeded during the two-year period—1929-1930 only—in which the Calumet and Cochise Shaft pumped 2.5 billion gallons and the Junction 2.2 billion. On cessation of pumping at the Calumet and Cochise in 1932, the Junction became the only operating pumping plant in the district, except for occasional pumping at the Czar during the rainy season.

The Junction Main Pumping Plant is located on the 2,200 level at the shaft station. Total effective pumping capacity is approximately 7,000 gallons per minute. Additional stand-by capacity is 2,250 gallons per minute. Water is pumped in a single lift of 2,200 feet to the surface through two 14-inch columns. Sump capacity is 230,000 gallons.

The description of the pumps is as follows:

No. Pumps	Type of Pump	Capacity G. P. M.	Motor H. P.
1	Horizontal, duplex, plunger.....	1,180	900
1	Horizontal, duplex, plunger.....	1,500	1,050
2	Horizontal, duplex, plunger.....	1,000	750
1	Horizontal, triplex, plunger.....	2,250	1,500
		6,930	
1	7-stage Centrifugal (Stand-by).....	2,250	1,750

Acid water, about one-fifth of the total gallonage, flows by gravity to a 30,000-gallon overhead sump. Here it is diluted with fresh water pumped up to it by a small centrifugal pump having a capacity of 1,500 g.p.m. against a 40-foot head. The resulting mixture in the overhead sump, known to the pumpmen as "dirty water," is handled separately from the time it leaves the sump to the point of discharge from the divided flume a mile from the shaft collar. Two of the pumps and one of the pump columns handle the "dirty water" exclusively. During the rainy season, it is at times necessary to add lime to the sumps to neutralize the acid action of the water. The average volume of "dirty water" pumped is 2,200 g.p.m. "Clear water" from the 200,000-gallon sump below the station makes up the remainder of the total water pumped, which averaged 4,722 g.p.m. during August, 1936.

Water from below the 2,200 level flows to a pumping plant on the 2,700 level. Here three 1,350-gallon centrifugal pumps lift it 514 feet to the 2,200 sump. Between 1,800 and 2,000 g.p.m. are being pumped at present.

Drainage of Area East of Campbell Shaft

The 6,000-gallon flow, previously mentioned, was cut by pioneer drifting from the Warren shaft, on the 1,800 level, at a point about 2,000 feet southeast from the Campbell Shaft. Pumping was discontinued at the Calumet and Cochise Shaft in 1932, so at present both it and the Warren, with their level development workings, are filled with water to an elevation 75 feet above that of the Campbell 1,300 level.

To permit prospect work in this direction, it is necessary to first unwater these workings. Toward this end, the 1,800 Campbell level has been driven to within 23 feet horizontally and 30 feet vertically below the water-filled workings.

A standard cast-steel water door is located about 1,200 feet back from the face. A 12-inch pipe line, 4,200 feet long, extends from the inside of the concrete bulkhead forming the door frame to the Junction 2,200 Pump Station. The present flow of about 300 g.p.m from the drift is being increased by diamond drill holes into the water-filled workings. It is planned to drain the area at the rate of about 2,000 g.p.m, increasing this rate if necessary.

Semi-monthly measurements of the water levels in the Warren and Calumet and Cochise Shafts serve as checks on progress of unwatering.

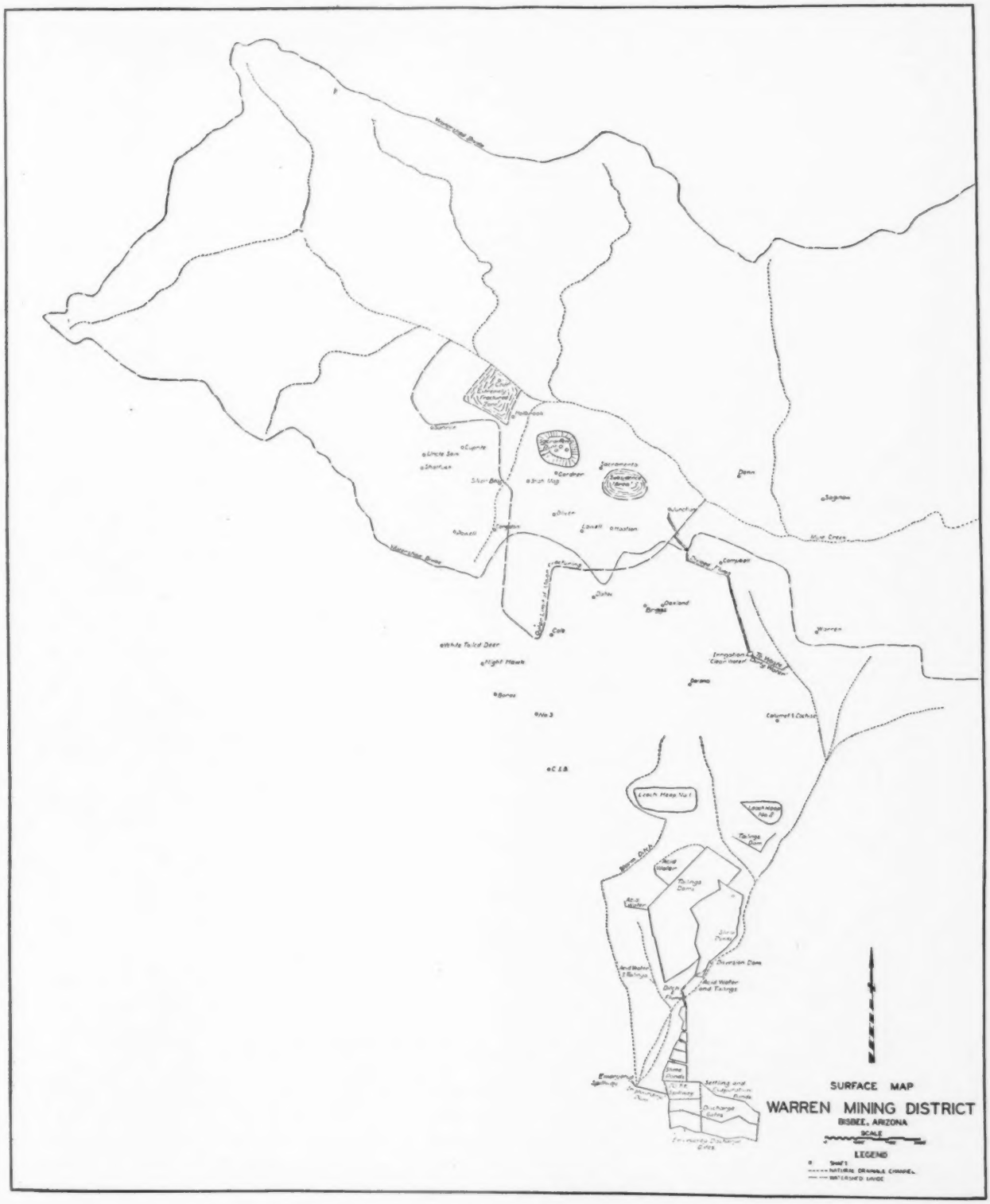
Surface Water Disposal

As would be expected in a region of

semi-aridity, the surface demand for the "clear water" from the mine is great, greater in fact, than distribution facilities can satisfy.

A small amount is used for underground drilling purposes, in change rooms, and other miscellaneous uses. Surface fire tanks and irrigation in the vicinity of the pipe lines leading to them seasonally use appreciable quantities. By far the greater part of the water, however, is delivered by the pump columns to the disposal system shown on the surface map.

"Clear" and "dirty" water are carried from the Junction Shaft Collar by concrete flume and pipe line, respectively, for a distance of about 500 feet, at which point they are discharged into a rectangular wooden flume 4 feet wide and 10 or 18 inches—varying with the slope—inside height. A vertical 2-inch plank divides the flume into two equal sections. The upper edge of the dividing wall is



2 inches lower than those of the outer walls, thus permitting excess "clear" water to overflow into the dirty water section.

At a point about a mile southeast of the Junction Shaft, the clear water enters a discharge box from which is pumped a volume sufficient for irrigation purposes for the town of Warren. The remainder, combined with the "dirty" water, enters a 3-foot flume by which it is carried to the point of discharge into a natural drainage channel.

The water, heavily charged with sediment, follows the natural drainage channel for about two miles, at which point it is elevated by a small diversion dam to a ditch and flume from which it is discharged 1,600 feet further on into the upper unit of a series of small "slime ponds," originally used for disposal of tailing liquor from heap leaching operations. Passing through successive ponds, most of the sediment is settled out by the time the water reaches the first of the five large evaporation ponds at the lower end of the system.

Such an amount as is required for irrigation of Company land south of the ponds is drawn off through control gates. This water is perfectly clear, slightly alkaline in reaction, and suitable for watering stock or agricultural purposes. The remainder disappears by seepage and evaporation, the rate of the latter being quite high throughout most of the year.

For about 10 months in the year, the mine flow is the only water in the natural drainage channel. Sporadic rains during July and August, however, result at times in very sizeable streams which, although seldom over a few hours in duration, scour out the sediment deposited by the mine water and, if not impounded, would transport it to outlying lands to the south.

In addition to the sediment, other undesirable elements enter the natural drainage system and require special methods of disposal. Drainage from the leach heaps, shown on the surface map, produces water charged with iron salts and slightly acid during the rainy season even though no heap leaching is being done. Concentrator tailings are likewise picked up by natural drainage during the rainy season and transported southward.

In order to dispose effectively of all three elements, namely: mine sediment, "acid" water, and tailings, an impounding dam is located just below the confluence of the natural drainage channels carrying them. This dam, 1,600 feet long and 6½ feet (average) high, provides sufficient storage to impound, without overflow, the water from all but the heaviest rains. Tailings and sediment are settled out and leach heap water rendered innocuous by dilution and neutralization. On rising to a point 2 feet below the top of the dam, the water starts to overflow the 70-foot spillway into the upper of the five large evaporation and settling ponds. An emergency spillway at the western end of the dam is set at an elevation 1 foot higher. It is very unlikely that water in sufficient volume to require its use will ever occur.

Distribution of water within the large evaporation and settling ponds is effected by controlled discharge gates. Emergency gates are provided for discharge through the southern dike of the ponds, if necessary.

It is estimated that the settling ponds will dispose of the sediment from the mine water for a period of about 15 years. The accumulation during the past four years has practically filled the upper series of small slime ponds. These were partly filled, however, prior to their becoming a part of the water disposal system. Accumulation of sediment behind the impounding dam is slow, owing to the fact that it is required only for the water from occasional rains for about two months of the year.

Water disposal, already one of the major charges against mining, will become an increasing item of cost as development continues in depth and eastward.

It is largely in anticipation of increased water in this direction that a total combined pumping capacity of approximately 16,000 g.p.m. has been installed at the Junction, Calumet and Cochise, and Czar Shafts.

In addition to being a heavy charge against mining, water represents perhaps the greatest hazard to operations. Every possible precaution is taken, such as provision of adequate pumping capacity and power supply, bulkheads and doors, and pilot holes ahead of development faces, but it still remains a real danger and one which requires constant planning and attention.

New Reverberatory Furnace

(*Continued from page* 83)

The boiler is 60 tubes wide and is provided with slag screen on the front row of tubes. There are three steam drums with diameters of 36 in., 48 in. and 42 in. respectively, while the length of each drum is 36 ft. ½ in. The mud drum is 48 in. diameter and 32 ft. 8½ in. long. Equipment includes: Feed water regulator in addition to hand regulation; continuous blow-off with heat exchanger to feed water heater; soot blowers on the second and third banks of tubes, using superheated steam for blowing the dust from the tubes.

The walls of the boiler are constructed of fire brick and vary in thickness from 18 in. to 22½ in. Due to the unusual width of the boiler, particular attention was given to the design and location of doors for hand lancing through the front wall of the boiler. Two tiers of 10 doors each were installed for hand lancing and have proved very efficient. Air at 80 lbs. pressure is used for hand lancing.

The boiler outlet area is 120 sq. ft. and the gases leaving the boiler pass through a short downtake and into a hopper bottom balloon flue to the main stack. The damper for furnace draft control is located in the short connecting flue between the boiler and balloon flue. An automatic draft regulator was provided which has not yet been placed in service, since draft control only requires regulation of one damper the hand control has proved satisfactory. A meter panel located near the boiler contains the records of boiler operation. The meters record: Furnace draft; pounds feed water per hour and its temperature; pounds steam per hour, steam pressure and temperature; temperature of boiler outlet gas and draft at boiler outlet.

Furnace-Boiler Unit

The unit has not been in operation long enough to furnish complete data on performance. A schedule or routine of operation is being established which aims toward maximum furnace operating rate with minimum attention to boiler and results obtained have been very gratifying. The short period of operation indicates that: the removal of accretions from the front bank of boiler tubes by hand lancing can be accomplished without interference with furnace operation; the amount of dust collected in the boiler will be small due to the large area and low velocity of gases passing through the boiler; the location of the slag skim will prove satisfactory; the heat recovery in the boiler will fulfill expectations.

The accompanying data is compiled from a 12-day period of operation during which preliminary tests were conducted by Mr. C. H. Cole, plant metallurgist, to whom credit is acknowledged for the above report and operating data.

FURNACE AND BOILER

Data from Test Period

Furnace	
Tons solid charge per day	1,074
Fuel ratio—mil.B.t.u. per ton	3.11
Boiler	
Lbs. steam per hr.	58,600
Steam press. gauge	164
Steam temp. degrees F.	492
Gases to boiler temp. degr. F.	2,300
Gases from boiler temperature degr. F.	580
Actual evaporation, lbs. per thousand B.t.u.	.421
Equivalent evaporation, lbs. per thousand B.t.u.	.515
B.H.P. developed	2,077
Boiler Heat Balance	
Heat in gases to boiler—Mil. B.t.u. per hr.	84.2
Heat in gases from boiler—Mil. B.t.u. per hr.	19.5
Heat available for steam from gases—Mil. B.t.u. per hr.	64.7
Heat transferred to steam—Mil. B.t.u. per hr.	69.6
*Heat unaccounted-for gain—Mil. B.t.u. per hr.	4.9

** Unaccounted-for gain due to radiant heat from slag bath. Boiler radiation loss not taken into account.*

Oxy-Acetylene Welding Practices in the Metal Mining Industry†

By H. R. WASS*

THE oxy-acetylene process has not, so far as I know, undergone any revolutionary changes during the past several years. Practices appear well established with little indication of spectacular future developments. The multiflame blowpipe which speeds things up noticeably, and the highly developed template-guided, motor-driven devices for multiple and repetitive flame cutting are decided advances over previous practices. With equipment and materials being subject to constant improvement, it may be freely predicted that welded structures and equipment will be used more and more during the coming years.

The greatest present need is for designers, draftsmen and engineers who can think, or learn to think in terms of welded equipment and structures. The greater part of academic design data which these men absorbed in school, appears obsolete and unsuited for application to welding practice; it offers little aid to the designer who finds himself required to design welded equipment. It must be realized that the application of welded construction is fundamentally different from riveted construction. A welded joint, to all intents and purposes is a monolithic structure; it is more than a mechanical union of the various intersecting members; it is also a monolithic metallurgical union, capable of acting to resist stress in every direction; tension, compression, shear and torsion. Picture a riveted joint designed to resist anything but shear.

Not enough importance is attached to the thorough training of the operator. Often his instructions are meager and sketchy. Often his knowledge of the behavior of metals under stresses is negative, and he is under other handicaps as well. The diversity of construction materials used in the modern plant, the speed with which emergency repairs must be made, and the permanency of the job required of the operator, not only manual skill, but a complete and thorough understanding of metals and their characteristics. Each step of the welding procedure must be analyzed carefully in order that contraction and expansion may be properly cared for and possible distortion minimized. These precautions are fully justified, especially upon equipment which must be repaired in place, where a good smooth torch finish must take the place of the more expensive machine tool finish, or upon equipment which is built up entirely in the field away from machine tool facilities. Maybe only one relatively small part may require machining, in which case the part is machined first and welded in place afterward.

The reluctance of some engineers to accept welding as a prime agency in fabrication, has caused a great many welding problems to be placed squarely up to the Master Mechanic and his force. Many such men have fully recognized the economic need for shorter, less costly and fully reliable methods of construction and repairs. They have had to assume entire responsibility for both design and construction; they have had to develop both procedure and technique as best they could without help or advice from the engineer. Give the shop men credit; they generally know the value of the American dollar and its relation to costs.

The producer and refiner of metals enjoys few, if any, competitive advantages; economic advantages must be created to meet the demand for reduced costs. One highly desirable economic advantage is created by modernizing maintenance methods; the initial step in this modernization is the greatest possible use of the oxy-acetylene torch and modern welding methods. Although the basic principles of welding are well known, there are thousands of cases of delayed application. I feel that less than 50 per cent of its possibilities are being used.

The metal mining industry is conservative without prejudice, and does not accept revolutionary discoveries at their advertised value, or without proof of their possible merits. Oxy-acetylene processes are accepted by the metal mining concerns as indispensible to their operations, and every possible opportunity for expanding the use of the process is used.

I hear many people predict that the electric metallic arc will certainly supplant the gas welding process. I do not know of any oxygen or acetylene manufacturer going out of business, even with the economic stagnation of the past few years. I have not heard of any receiverships for such concerns. With all due respect to the metallic arc process, we cannot solve all our problems by electricity. Satisfactory overall results may generally be obtained in more than one way; the alert engineer or executive will take the time to find out which is best for the job.

In the several plants of my acquaintance, each welder operator, either gas or electric, exhibits an amusing and at times, decided partisanship for his pet process. Each man will claim, and often demonstrates that his process is the best on this or that particular job.

The various processes necessary in metal mining and refining are many and varied; some are complex. There are few lines of industrial endeavor which require in their several processes a more diversified line of equipment, much of it special in design and construction, of metals other than iron and steel. Copper, zinc, lead, monel metal, nickel, aluminum and other non-ferrous alloys are frequently required because of some inherent property, physical or chemical, which makes them suitable for the intended purpose. The torch plays a most important part in the fabrication of these metals.

I have found, from several years' experience, that welded structural work costs about 20 per cent less on the average than riveted work of the same character. Simplified design and possible economies in the use of materials and elimination of the several handlings of materials in the shop are responsible for this direct difference in costs. In some plants among my acquaintance, circumstances and local conditions may hinder or prevent field or erection welding, in this case, erection joints may be bolted, riveted or pin connected as may appear best.

In the fabrication of roof and other trusses, or in the repair of trusses which may involve outright replacement of one or more members, oxy-acetylene welding of joints or splices has been proven most economical and satisfactory, more especially if a butt-joint can be made.

† Read at the Thirty-seventh Annual Convention, International Acetylene Association, St. Louis, November 18, 19, and 20, 1936.

* St. Joseph Lead Company.

A properly made butt weld is the strongest of all structural joints and has the greatest margin of safety of any type of welded joints. It is surely the most economical. From such crude destructive tests as we are able to make, I have concluded that we may, with entire safety, assume the strength of a butt-welded joint as 80 per cent of the section.

Butt welds in pipe lines and pipe work is an established practice and has always proven satisfactory. Rarely, if ever, are butt welds reinforced, except to provide connections for suspensions and anchorages, or connections for attachments.

It goes without saying that the weld must be sound and free from porosity, the fusion of weld and parent metal must be complete, and concentrated stresses at the fusion line must be avoided.

Mining concerns have been welding permanent pipe lines for years. Flanges and flanged fittings are used only where absolutely necessary. Flanges are often welded to the pipe, especially when extra strong pipe is used. Connections and branch outlets are welded to the main pipe with suitable reinforcements, depending upon the pressure carried. Special connections, Y's, tee's, reducers, long sweep and double sweep fittings are fabricated as the need may arise, using any commercial weight of pipe.

Gas, compressed air, steam and water service lines can be salvaged with flame cutting, re-erected and welded in place with the oxy-acetylene torch. I know of welded lines up to 16 inches outside diameter with ⅜-in. thick walls which have given over 15 years of satisfactory service under the most adverse conditions. Pitting and local corrosion can be repaired effectively and cheaply with the gas torch. This often causes the welder to work in uncomfortable positions; a good welder can meet such emergencies and still make good welds.

I have been a party to the welding of several heavy machinery shafts, some as large as 15 inches in diameter, requiring the simultaneous use of two torches with four operators alternating. One major break of this kind required nearly 200 pounds of filler rod, yet the cost of this repair including preparation, welding, annealing and machine work was only 22 per cent of the cost of a new shaft. This particular shaft, along with others of its kind, is in regular service. No failures have occurred. Broken locomotive frames, side rods, main rods, piston rods, and axles have been welded and put back into service at not over 25 per cent of their new cost. No failures in service.

Restoration of worn out and discarded machine parts by welding has not always fulfilled our expectations. If so, there is always a good reason, possibly several. A worn part may be restored to form, shape and size, to all appearances better than new, and still be weaker than before it was welded. If it fails in service, the welder, engineer or executive in charge should get on the job and find out why. The cause of failure may be, (1)—Concentrated stresses due to too great a heat or too rapid cooling; (2)—Unsuitable and unstable base metal high in phosphorous and sulphur with a resultant contaminated weld deposit; (3)—Unskilled workmanship or defective equipment; (4)—Imperfect fusion, porous welds, slag inclusions; (5)—Unsuitable filler rod.

Even when a good looking weld is made, we have no knowledge of the chemical make-up of the weld, or its resultant molecular structure. These must be taken for granted; all uncertainties and variables must be allowed for by careful procedure. We have no reliable or suitable method of testing completed welds. The destructive tests on shop samples to indicate the welder's proficiency seems to me about the most practical manner of keeping everybody on the job. I really wonder whether exhaustive and conclusive tests on every welded job are necessary. The maintenance shop has neither time nor equipment to engage in such test work. The answer seems to call for qualified operators who will consistently turn out satisfactory work regardless of circumstances and conditions; the diversified lines of work in metal mining plants require the best obtainable. Maintenance standards should permit nothing else.

We all have, for years past, placed dependence upon riveted and bolted joints without resorting to exhaustive tests, depending upon the designer's ability as a designer, the shop practices, and our old friend, the factor of safety. Castings rarely get any test except visual inspection and check analyses for verifying the chemical composition.

In the fabricating plant, the situation differs, and the men in charge are to be commended for their effort in developing methods of non-destructive investigations of completed welds.

The plant maintenance man must depend on his own background of experience and his operator, who, if he know his metals, can foretell the results with surprising accuracy. Final conclusions must be formed by the behavior of the finished job in service. The proof of the pudding is in the eating.

From the coal handling machinery in the power house, through all the processes of mining, milling, smelting and refining, the oxy-acetylene outfit is the one universal tool for all departments. Elevator buckets for handling coal and ashes can be fabricated from steel plate by welding, the wearing edges will be faced with commercial hard alloy overlays, rolls and roll rings in the coal pulverizers are hard faced to triple their useful life, the blading of the steam turbine is repaired by brazing, motor winding and heavy duty control equipment is reconditioned with the torch, expensive contact tips of high voltage oil switches are built up, mining machinery such as rock drills, power shovels (especially dipper teeth), are reconditioned and kept in condition with the torch, ore cars and mine locomotives receive their share of attention, hoisting equipment skips and cages, all feel the influence of welding equipment. Stone and ore crusher wearing parts have their useful life tripled by hard facing with suitable alloys, blast furnaces, roasters, acid manufacturing plant, refining furnaces, bessemer type converters, ingot and slab casting machines are fabricated and repaired, the machines for loading the finished metals for shipment, all these and more are dominated by autogenous welding. Extensive repairs and replacement of locomotive boiler fireboxes are made with the welding torch. There is no reason why an entire locomotive boiler could not be built without a single rivet, using the welding torch alone.

Most of the larger metal properties in the Western Hemisphere are in somewhat remote locations. The maintenance man cannot get 12 or 24-hour delivery on emergency repairs. He must either make repairs as the occasion demands or he must make his equipment stand up longer between overhauls. His torch outfit helps to do both because of its flexibility and versatility. Often he can build better and more rugged machines than he can buy. The hard surfacing alloys have so clearly proven their worth in every day rough service that no engineer or manager can afford to ignore their desirability for extending the life of many wearing parts to triple and more than will be otherwise received. Costs are always favorable, and the savings are astounding.

I know of metal mining concerns using as many as 50 oxy-acetylene outfits. They could not get along without them.

Whenever metal wears, the alert executive, whatever his title, will find plenty of outlet for his imagination and his initiative in developing economics in construction, maintenance and operation.

It is time for the engineer to take his place in the sun, not only by creative effort, but by an unparallel display of initiative in accepting and adopting the art for the benefit of his employer and indirectly for mankind in general.

The Sixth Annual Convention of the Ohio Coal Conference will be held in Columbus, Ohio, May 11, 12, and 13.

The Banner Mining Company at Lordsburg, N. Mex., has completed construction of its 200-ton mill and has gone into active production.

Four for One Stock Split

Bunker Hill and Sullivan Mining and Concentrating Company on April 22 held a meeting of stockholders to approve an increase in the authorized number of common shares and a reduction in par value to provide for a four for one stock split up. It is planned to issue four new shares for each share now outstanding. This would increase the number of common shares to 1,308,000. This company in 1936 earned $4.72 a share on common stock. Capitalization of the company is $5,270,000.

Wheels of Government

(*Continued from page* 75)

and the regulations promulgated under those acts are substantially the same as the regulations promulgated under the Revenue Act of 1936, referred to and quoted above, this memorandum is also applicable to those acts."

The above ruling has resulted from representations made by those interested in the welfare of mining taxpayers and indicates that the General Counsel's office has developed a clear and an equitable interpretation for the guidance of the field revenue agents and the representatives of the bureau.

The enactment of the Bituminous Coal Act of 1937 (Guffey Act) has again placed the bituminous coal mining and distributing industry under the National Bituminous Coal Commission. Immediately upon the appointment of the new commissioners, work will proceed toward the early promulgation of the code, provided for in the act. At the present time there appears to be a tendency on the part of the industry to "go along" and to endeavor to try out the possibilities of the act. The result most naturally, will depend upon the degrees of ability which is brought into the administration by the representatives of the Federal Government as well as upon the situation in which producing managements find themselves in attempting to comply. There is no serious coal mine labor controversy in the offing and with a fair condition of business, much may be learned in the next four years.

Action is pending on amendments to the Walsh-Healey Government Contracts Act which affects government purchases of materials and service. The amendments provide:

1. Lowering exempted contracts from $10,000 to $2,500.
2. Extending the provisions of the act to contracts for services as well as supplies.
3. Requiring the dealer, when he is the contractor, to submit with his bid a certificate from the manufacturer or from whomsoever he obtains any of his supplies that shall contain the same stipulations regarding conformance with the act as that required of a manufacturer contracting directly with the Government.
4. Addition to the provision in the old bill (which required the preparation of a list of contractors, who because of violations of the act are ineligible for a three-year period for Government Contracts) of a list of firms "refusing to comply" with directions or orders of the National Labor Relations Board.
5. Changing the overtime payment provisions by declaring that overtime rate shall not be required for any one day's overtime if the week's aggregate of hours is not more than 40.
6. Amending the definition of "minimum fair wage" by providing that where no single rate is paid to a majority of the workers, the average rate shall be the prevailing rate of pay and allowing a special rate for apprentices, to be determined by the Secretary of Labor.
7. Re-defining exempt contracts which fall within the "open market" provisions, but making no additions to the list previously carried in the regulations.
8. Barring industrial home work.
9. Authorizing the President to suspend the provisions of the act when he finds a national emergency exists.

Stream Pollution legislation has received attention in the House of Representatives during the month. On April 21, the Vinson (H. R. 2711) Water Pollution Bill passed the House and is now subject to Senate action. The bill passed without amendment other than to provide that the Chief of Army Engineers shall pass upon the recommendations of the board which is set up in the Bureau of Public Health. In the Senate it is expected that action will be delayed, because of the situation occasioned by the President's Supreme Court Bill. Senator Lonergan has stated his determination to endeavor to secure a mandatory bill which will provide for Federal control of pollution and it is even deemed possible that a situation may develop which will prevent the enactment of any stream pollution legislation in the present session.

An interesting feature of the Navy Department Appropriation Bill which is now ready for the President's approval is the authorization for an expenditure of $3,500,000 for the purchase of "strategic" minerals. This has been secured through the efforts of Representative Scrugham of Nevada, who has been much concerned over the lack of preparedness in this regard. The exact wording of the amendment which provided the appropriation is reproduced herewith:

"For the procurement and transportation of strategic and critical materials, $3,500,000, to remain available until expended: *Provided*, That materials acquired hereunder shall not be issued for current use in time of peace without the approval of the Secretary of the Navy, except that materials acquired under this title may be issued for current use when replaced by materials purchased from current appropriations: *Provided further*, That for the purpose of this paragraph the Secretary of the Navy shall determine what materials are strategic and critical.

The steel industry has expended from 1935-1937, for new plants and equipment nearly $650,000,000, according to the American Iron and Steel Institute. Of this amount, $290,000,000 represents the investment in new properties and equipment for 1937; $216,000,000 was the total for 1936; and $140,000,000 the total for 1935.

Safety at Island Creek

(*Continued from page* 81)

Every three months we have a safety banquet or "get together" meeting for the entire supervisory force and department heads. These meetings give the management an opportunity to get in closer contact with the foremen and are held in two meetings or sections—one in the afternoon for the night shift and the other at night for the day shift, and usually last about two hours. The analysis of each mine's accident record and the record of each foreman is shown on a large blackboard. The facts brought out by the analysis are commented on by the management. There is usually an entertainment feature and a safety address by some speaker outside of the organization. We have found these meetings very inspiring and a means of creating enthusiasm, as well as getting closer cooperation from the supervisory force.

During the year 1936 this group of mines produced 4,450,966 tons of coal, compared with 3,602,904 tons in 1935. Our fatality rating from 600,484 tons in 1935 was increased to 2,225,483 tons in 1936. Tonnage rating for accidents classified on "Time Lost" basis increased from 12,131 tons in 1935 to 14,041 tons in 1936. The group of mines, as a whole, operated from March 7, 1936, to March 30, 1937, and produced 4,711,175 tons of coal without a fatality.

Two of our mines have had the best fatality record in the State of West Virginia for several months: No. 1 Mine operated five and a half years and produced 4,026,293 tons without a fatality and No. 20 Mine operated five years and produced 3,606,933 tons without a fatality. No. 7 Mine also has a good record, having produced 1,148,856 tons since its last fatality and No. 21 Mine has produced 1,233,423 tons since its last fatality. These are good records and we are proud of them; however, we are not satisfied and know that better results can be attained.

The prevention of fatalities and injuries in the mining industry is a mutual problem between employer and employe in every aspect. The responsibility for high accident rates rests with both and they should work together for the common good of all.

The employer can advise ways and means to eliminate hazardous conditions, but the only way we can combat the human element which enters into accidents is by perpetual safety education and instruction. The employe must be constantly reminded to do things he is required to do in the right way, which, of course, is the safe way.

"BE CAREFUL!"

The 46th annual meeting of the American Iron & Steel Institute will be held May 27 at the Waldorf-Astoria, New York City.

A New Epoch in Coal Cutting Bits

By E. P. STENGER*

IN coal mining as in all other fields the wheels of technical progress roll onward relentlessly. Changes take place so rapidly that the standards of today become the history of tomorrow.

If general usage establishes a product as standard, the standard cutting bit in the coal mining industry today is the familiar ½" x 1" rectangular section, pointed at one end and inclined forward to provide rake and clearance. Such bits are cutting a major portion of all the coal mined both in this and foreign countries.

At the 1936 exposition of the American Mining Congress a new and revolutionary bit method was presented. Double-ended, hardened and tempered cutting bits of alloy steel were made by a new machine at a high rate, production reaching fifty cutting points per minute.

The standard ½" x 1" bits are usually shipped to the mines in the unhardened state. Most coal contains glass-hard impurities, such as iron sulphite, which quickly dull the bits and make necessary their removal from the chain. In hard cutting each mining machine may dull hundreds of bits daily which must be gathered together and transported to the surface. Here they are again sharpened by heating to an intense heat and drawing out the point by a forging operation. After the bits have been reshaped they are either allowed to cool in the air or are quenched. The air cooled points are soft, while those quenched may be soft or brittle depending on the temperature from which they have been cooled and the quenching medium. Since the temperature of quenching is difficult to control it may vary from black to almost a white heat, so naturally the points produced are not uniform in hardness and are usually either too soft or too brittle. The non-uniformity in hardness can be reduced to some extent by a drawing operation following quenching as described by Mr. James Hyslop in various publications; but the coarse grain structure resulting from the forging heat cannot be corrected by this operation.

Hardened and tempered ½" x 1" coal mining bits are available, and they will,

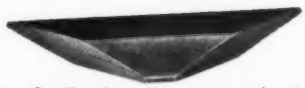


FIG. I—*Duplex Bit—approximately half size.*

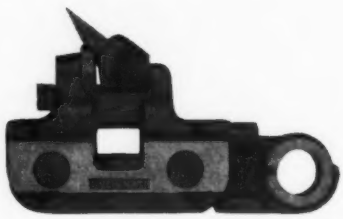


FIG. II—*Cincinnati Duplex Bit Mounting.*

the first time used, cut more coal than unhardened bits. However, after these heat treated bits are dulled, they are resharpened by forging as outlined above, and of course the high temperature destroys much of the benefits which had been derived from the previous heat treatment. Much of the miner's and the mining machine's time is lost while bits are being changed. Much expense is involved in sharpening and transporting the thousands of bits required daily.

To overcome this situation some attempts have been made to heat treat bits at the mine after each sharpening, but hardening steel is a tricky business. To do it right, high priced equipment, skillful operators and constant, close supervision are needed. Many coal mines are located in remote places where modern methods of heat treatment are not readily accessible. Hence, heat treating of bits after sharpening is seldom done and probably could not be done economically in most mining operations.

It should also be remembered that the heat treating operation becomes less effective after each resharpening because the intense forging heat removes carbon from the surface of the steel and progressively reduces its ability to harden properly. Since carbon is the all-important hardening element, it can be seen that after the bit is sharpened a few times, the cutting edges can no longer cut effectively.

The practice of hard facing the tip is another process which has been used by some coal operators to increase the life of the ordinary ½" x 1" bit. In some cutting such bits show superiority over ordinary bits. However, tipping bits with hard surfacing material takes time. Also if the bits are not heat treated after tipping they are often too brittle for hard cutting.

Mr. Wilcox in an article appearing in the April, 1936, issue of THE MINING CONGRESS JOURNAL states: "Generally one man can sharpen easily 200 bits per hour and the tipping or plating of bits under proper conditions takes about the same time." This estimated time of two hours for sharpening and tipping 200 bits, or in other words 100 sharpened and tipped bits per man hour, is a conservative estimate; however, it is certainly much closer to results actually obtained than some of the figures published from time to time.

To overcome the shortcomings of the ½" x 1" bit a number of prominent manufacturers of mining machinery have, in recent years, developed chains using multiple pointed, factory made, alloy steel bits properly heat treated to give long service and discarded when the points have become dull. In many mines these factory made bits have proven decidedly superior to the old type bit and are coming into general use.

The larger coal producing companies, realizing the advantages of the multiple pointed, correctly heat treated bit, and wanting to avail themselves of these advantages, nevertheless feel that with their tremendous bit requirements they should make their own bits. Unquestionably, they have a sound economic justification for this point of view.

Therefore, to make it readily possible for them to accomplish this purpose the Cincinnati Bit Method was developed; a method whereby the mine operator can economically make heat treated, alloy steel bits at the mine without the necessity of buying and maintaining heat treating furnaces, pyrometers and

* Cincinnati Mine Machinery Company.

quenching equipment. Likewise, forging equipment and the forge fire are entirely eliminated. By this new method one man can steadily maintain a production of between 700 and 800 accurately formed cutting points per hour.

The design of the bit produced by the new method is shown in Fig. 1 and its method of mounting in Fig. 2. It is a double ended bit, the stub of which is discarded after the two ends have become dull. This feature greatly reduces bit transportation costs. In this new method these double ended bits are formed from hardened and tempered bar stock of diamond shape cross section. Such bars are cut at an angle to produce sharp points with cutting edges having liberal clearance. As a result the power required for cutting with such bits is sometimes less than half that required by the common ½" x 1" bit. Because the bits are made of hardened and tempered alloy steel, they outlast the ordinary ½" x 1" bits two to six times.

In the new process the bars of alloy steel from which the bits are made are hardened and tempered at the factory prior to shipment. At the mine these bars are quickly cut to desired form of bit by a thin abrasive wheel driven at high speed. It might seem impossible to cut bars of hardened steel into finished bits without destroying the temper and reducing the hardness and cutting ability of the steel. However, the new bit machine shown in Fig. 3 makes such a feat practical. In this machine, a thin abrasive wheel, which does the actual cutting, is driven at a speed of over 15,000 feet per minute. Through a simple lever motion this abrasive wheel is brought in contact with the bar and passes through it in less than two seconds. The machine is equipped with an efficient device for applying coolant to the abrasive wheel to dissipate the heat from the cut. But this alone is not sufficient and other expedients must be resorted to. To explain these it might be best to briefly review the metallurgical changes which take place in steel during hardening and tempering.

In order to harden steel to enable it to cut effectively, it is necessary to heat it above its upper critical point at which temperature the carbon in the form of iron carbide goes into solution with ferrite forming the micro-constituent austenite. Now by cooling the steel rapidly from this temperature as by quenching in oil or water, the constituents, austenite together with martensite, are retained at room temperature. If the steel is now reheated for toughening, to temperatures ranging from a few hundred degrees upwards to around 1350° F. a reaction takes place in the steel wherein the austenite and martensite are progressively decomposed and converted into the micro-constituents, troostite, sorbite, and pearlite depending on the temperatures reached. The latter two constituents are relatively soft and are not efficient for coal cutting purposes since a fair degree of hardness is required.

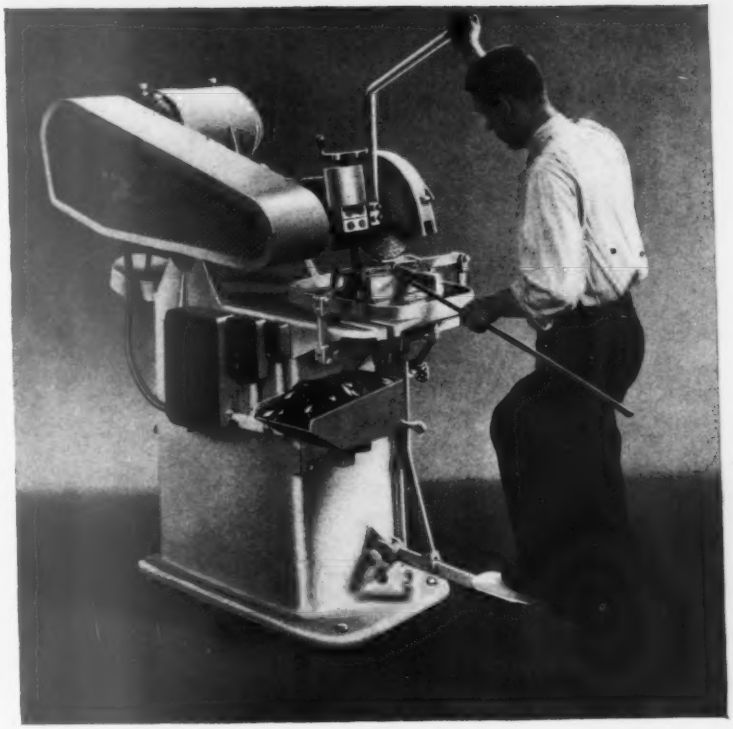


FIG. III—*New Duplex Bit Machine.*

In making a rapid cut through bar stock with an abrasive wheel, a considerable quantity of heat is generated. If the bar stock has been hardened this heat tends to draw the temper of the steel (that is, convert the martensite to sorbite and pearlite). In the new bit process, definite steps have been worked out to overcome this tempering action.

Steel bars of certain composition are used in combination with abrasive wheels having definite characteristics. The steel, in addition to having good cutting and shock resisting qualities, is of the type which retains its hardness at relatively high temperatures and loses hardness slowly. Certain alloying elements tend to make the steel sluggish in its breakdown to decomposition products. With this type of steel the new bit machine completes the cut and cools the bit before it has time to undergo metallurgical change. As indicated above, the actual cutting time during which the wheel engages the bar stock is less than two seconds per bit.

The operation of the new bit machine is so simple that no special training or skill is required. A man of ordinary intelligence can within a few hours become very efficient in its use. Enough bits can be produced by one man in a single seven-hour shift by the new bit machine to cut more than seven thousand tons of coal where mining conditions are average. The new bit machine is a tool by which costs can be lowered and production increased.

It will be interesting to watch the future of the coal mining industry to see if the operators will continue as they always have, to work out their salvation by taking full advantage of every technical advancement for lowering production costs. There seems to be a tendency on the part of some to put too much trust in regulations (governmental and otherwise) limiting production, fixing prices, etc. No doubt history will repeat itself and will show such remedies effective for only a short period of time and that the industry will have retained its competitive position by the time-honored method of increasing efficiency in its production and distribution methods.

Zinc Institute Meeting Highly Successful

The 19th annual convention of the American Zinc Institute established a new record in attendance. Howard I. Young was reelected president. The following directors were reelected:

Arthur E. Bendelari, president, Eagle-Picher Lead Company; James A. Caselton, St. Louis Smelting & Refining company; C. Merrill Chapin, Jr., vice president, St. Joseph Lead Company; Frank Childress, Joplin, Mo.; E. Gebhardt, vice president, Matthiessen & Hegeler Zinc Company; G. A. McCorkle, Krebs Pigment & Color Corporation; D. D. Muir, U. S. Smelting, Refining & Mining Company; Charles T. Orr, president, Athletic Mining & Smelting Company; William N. Smith, Vinegar Hill Zinc Company; and F. W. Willard, Nassau Smelting & Refining Co. E. V. Gent was reelected as secretary.

Circular Shaft Drilling at Idaho-Maryland Mine

By J. B. NEWSOM*

YOU have asked for a summary of our shaft drilling results, setting forth the points most likely to be of interest to operators.

The work was done with a core drill, shot type, drilling a hole five feet in diameter. The essential difference between our drill and other core drills, aside from its size, is that the entire machine goes in the hole. Thus as the hole deepens no time is lost handling drill rods, and no rod tower or rod handling tackle is needed. Also, because the operator is down with the machine, he can closely control the operation.

Number Two Shaft was put down 1,126 feet with this rig at a total cost lower than would have been possible sinking a single compartment shaft by conventional methods. The cost was lower in spite of the fact that we were developing our methods as the work progressed. An idea of the effect of the experimenting may be gained from the fact that 38.5 percent of the time during the last six months was spent on operations other than sinking. In other words, 61.5 percent of the time was spent on direct sinking, and the balance learning how to perform various operations, building up hoist capacity, and so forth.

Walls Stand Without Support

Since practically no powder was used on the job, the walls stand without support in most places. However, we went through some very heavy ground, which we supported with reinforced concrete. The cost of this averaged ten dollars per foot of shaft supported. To date, none of the cemented ground, and, in fact, none of the uncemented ground, has shown any signs of moving. Most of the cementing was done during May and June, 1935.

At first it was planned to strip the sides of the finished shaft and timber it, but since the ground stands so well that idea was abandoned, and steel guides put in the original hole, without lining it in any way. The guides are fastened in place with anchor bolts, leaded into the rock. Thus, the finished shaft is absolutely fireproof, as there is not a stick of timber in it except through the forty feet of surface alluvium and at the stations.

The distance between guides is 48 inches, which leaves room for several electric cables behind each guide. The hole is round, of course, so the cage floors will be rounded at the ends and flat at the sides, a sort of oval cross section. A three deck cage is being installed, each deck to accommodate ten men.

There were several reasons for putting this shaft down. One was to provide ventilation. Since the hole is round, and the sides are smooth, it is ideal for that purpose. Several months ago, a connection was made with the lower workings. A rough check indicates that about 3,500 cubic feet of free air per minute is flowing into the mine through this connection.

Another reason for putting the shaft down was to determine the feasibility of the drilling method for various types of ground. The shaft was drilled through gabbro, serpentine, ankerite, gouge, diabase and vein structure. The ankerite and gouge had to be supported, but except for the added trouble of cementing ankerite and gouge none of the ground encountered gave us any real trouble.

A good many technical problems were solved, not the least of which was to find a method of pulling cores in bad ground. How well we succeeded may be visualized from the accompanying picture of a core. It was pulled from the hole in a single piece and fell apart as shown when the core pulling device was released. For comparison, the accompanying illustration is given of a core which held together, the usual case.

Another problem was to keep the hole running vertical. Before this problem was solved we had to straighten the hole twice by blasting a cavity in the side wall large enough to enable us to replumb the drill. The third time we straightened the hole it was done by turning the hole during the regular drilling operation, with practically no loss of time.

Core from broken ground after release from lifting device.

Number Two Shaft did not make much water, the heaviest recorded flow being about 300 gallons per hour (7,200 gallons per day. Several apparently feasible methods of handling heavy flows of water have been suggested.

Two Men Per Shift

Three shifts per day were operated, two men being on each shift, a hoist man and a driller. In addition, there was a foreman, responsible for the general conduct of the work. He worked odd hours. We had only one serious accident, resulting in a broken leg. However, it happened at night, and help had to come about half a mile before the man could

* Engineer, Idaho-Maryland Mining Company.

Solid core taken out in one piece. Note size in comparison to man.

be brought to the surface. Though the method is inherently very safe, this feature of having only two men at the job, each inaccessible to the other in case of an accident, is not good. If other workmen were near at all times, it would be all right.

At various times, such as when we were breaking in new men, or were trying some new method of operating, three men were kept on the job continuously, simply as a safety precaution.

Since the work was largely experimental, careful record was kept of the way the crew spent its time. From a study of the drilling cycle, as disclosed by these logs, it is apparent that two holes side by side could be drilled almost as fast as a single hole, and for very little additional cost. In this case, three men would be used per shift, one for each hole and the third running the hoist.

The method could be used wherever electric power is available. Compressed air is unnecessary. A small blower would be needed for ventilation, as the drill produces heat, and as such foul air as is produced tends to settle in the bottom of the hole.

1,200-Foot Holes Feasible

With our present knowledge of operating methods, holes 1,200 feet deep seem perfectly feasible. If deeper holes were desired, it would probably be wise to cut an auxiliary station at the 1,200-foot level for the power cable, small tools, and so forth.

One thing learned was that unskilled men can not make satisfactory headway with this method. They make serious mistakes and have accidents until they have been on the job for several months. I should say that any operator using the method should capitalize on our experience by hiring some of the men that worked on Number Two Shaft.

Operators often ask how fast the method has proven. During one period when the operation was working smoothly we drilled 162 feet in 34 days, an average of 4.75 feet per day. If we eliminate the time spent abnormally from the record of the last six months, the sinking record works out at 4.32 feet per day. It should naturally be lower, because the hole was near its maximum depth when the record was being made. During a three-day period, we drilled 21 feet and during one 24-hour period we completed two drilling cycles for a depth of over ten feet. I think the speed should easily average ten feet or more per day when we have applied the advances in equipment and operating technique which are now apparent.

One question often asked is how large a hole can be drilled. We can drill any diameter hole above four feet, but I am not sure how large a core can be efficiently handled. Since the core from a five-foot hole weighs about a ton and a half per foot of length, it is obvious that the core weight from a very large drilled hole would be such as to require very heavy tackle. If the method were to be used simply as a method of producing smooth, unshaken walls, the spoil being broken and mucked, I should say there is no upper limit to the possible diameter.—(*In cooperation with Mining and Industrial News.*)

Sullivan Plans Improvements

One million dollars is to be expended, beginning immediately, by Sullivan Mining Company in a 50 percent increase of its electrolytic zinc plant near Kellogg, Idaho. Stanly A. Easton, president of the company, says the rest of the year will be required to complete the job. For some time the plant has been operated at its full capacity, producing 60 tons of refined zinc per month. The zinc ore has come chiefly from the Bunker Hill and Sidney mines. An additional heavy tonnage of zinc concentrates will begin coming in a few weeks from the new 750-ton plant, nearing completion, at the Star mine at Burke, Idaho. Zinc production also is increasing at the Bunker Hill mine, and other mines in the Coeur d'Alenes have some zinc to offer the Sullivan company, when its plant has been enlarged. Sullivan Mining Company is owned jointly by the Bunker Hill and Hecla companies. Mr. Easton, president of the Bunker Hill, gives his attention to the electrolytic plant, and James F. McCarthy, president of the Hecla company, looks after the mining and milling of the Star ores. The Star is owned by the Sullivan Company.

Calumet & Hecla Turns Management Of Isle Royale Copper to New Group

Calumet & Hecla Mining Company has withdrawn from the management of the Isle Royale Copper Company, according to *American Metal market.*

At the annual meeting of stockholders, a complete new slate of directors was elected, made up chiefly of Paine Webber & Company and Copper Range Company interests. Former board was largely composed of Calumet & Hecla Consolidated Copper Company interests, as this company owns 23.3 percent of Isle Royale stock.

The new board is composed of F. Ward Paine, Stephen Paine, Frank H. Brown, and James Nowell, all partners of Paine Webber & Company. B. D. Noetzel, purchasing agent of Copper Range Company at Houghton, Mich., Albert Foote, manager of Paine Webber's office in Houghton and Harold C. Schulte, an attorney of Houghton.

The new group is contemplating the purchase of the 35,000 shares of Isle Royale (out of total of 150,000 outstanding), now owned by Calumet & Hecla, and is planning to make a similar offer for stock owned by stockholders voting against liquidation of Isle Royale at annual meeting.

The 1937 Edition of "Mac's Directory and Handbook of Anthracite"

The 1937 edition of *"Mac's Directory and Handbook of Anthracite"* is just off the press and is now available for distribution.

This anthracite directory combines complete authentic information on anthracite producing and anthracite selling companies, with data on manufacturers of approved equipment handled by anthracite selling companies. A great deal of interest and value is added to the publication by the incorporation of timely articles covering the various phases of the industry. These articles include such as: "Anthracite Industries, Inc.," "The Anthracite Institute," "Citizens Anthracite Committee," "Brief History of Anthracite," "Stolen Anthracite," "Advantages of Anthracite Over Competitive Fuels," "Thermostats," "Automatic Heat With Anthracite."

A completely revised map of the anthracite regions showing the location of each colliery or mine is included, a unique feature of this map being that the distinction between collieries and mines is indicated.

An entirely new and original feature of the directory of anthracite producing companies is the fact that all collieries, washeries, mines, and strip pits are shown as such, and in the case of a colliery, breaker, or washery receiving raw coal from other mines, this information is plainly shown. Also where a mine or strip pit does not prepare its own coal, notation is made as to the name and map number of the colliery or breaker through which this coal is prepared.

One of the most important phases of the anthracite industry is the cleaning plant, or breaker, and for the first time in any publication, complete data has been included, covering the various items of preparation equipment in use at each breaker.

News and Views

of Interest to Mining Men

"Black Damp," the Miner's Enemy, May Become His Friend

"Black damp," the coal miner's deadly enemy, may come to be his friend in time of dire need, says the U. S. Bureau of Mines.

There are places in mines where there is little or no ventilation and in those places he may encounter the insidious and deadly black damp. Black damp consists of the residual products left after pure air has remained in contact with coal, timber and other materials susceptible to oxidation at the mine temperature. It is simply pure air that has lost its oxygen through absorption and oxidation processes, and as a result of these processes varying amounts of carbon dioxide have been added to it. It often has little or no odor. It may be drawn into the manways and working places from old abandoned workings during a sudden fall in the barometric pressure, and, because it has no odor or color, a miner may walk into the damp unknowingly and be suffocated almost immediately.

Chemists of the Explosives Division of the Bureau of Mines have reasoned that, if these gases will suffocate miners, they can be used to suffocate fires and to prevent explosions of combustible gases, vapors and solids, because combustion processes require the proper amount of oxygen the same as people do in order to survive.

They have shown that, by the application of the smothering process, explosions of combustible gases, vapors and solids can be prevented and mine fires can be extinguished. The process consists simply of adding the proper amount of synthetic black damp (carbon dioxide and nitrogen mixtures). The exhaust gas from internal combustion engines and flue, or stack gases from coal, manufactured or natural gas, are the chief sources of inert gas. By properly controlling the operations the gases consist largely of carbon dioxide and nitrogen with little, if any, oxygen. In mine fires the black damp is made most easily by the fire itself, it being only necessary to seal off the fire and thus prevent air infiltration. The fire burns and reduces the oxygen in the sealed area until the concentration is too low to support a flame. The combustion process then slows down, the fire cools, and eventually goes out.

The Bureau of Mines' chemists have determined the "critical" oxygen values below which the atmospheres must be maintained to prevent explosions and the amount of synthetic black damp that must be added to prevent explosions for various types of combustible gases and vapors. They have found that the amount that must be added varies for each particular combustible and also varies with the percentage of combustible present.

By testing hundreds of possible mixtures containing one particular gas with various proportions of carbon dioxide or nitrogen, graphs have been prepared showing the "critical" oxygen value for any mixture of the gas with black damp.

The use of black damp is proving effective in the repair of gas mains, tank cars and gas holders which contain highly combustible gases and vapors, as well as for combating mine fires.

Hecla Boosts Dividend Rate

Hecla Mining Company has again boosted its dividend rate and is now on a $1,000,000 annual dividend basis. This action was taken at the annual meeting of the company in Spokane, in April, at which time James F. McCarthy, president, and all the other directors were reelected. It was then announced the company would pay a 25-cent quarterly dividend, June 15.

AT THE BASE BALL PARK!

—The Evening Star

Kennecott Promotes Sales Organization

Carl K. Lenz, former manager of midwestern sales for the Chase Brass & Copper Company, has been made assistant to Robert L. Coe, vice president in charge of fabricated sales for the Kennecott Copper Corporation, with offices at 120 Broadway, New York. Marvin A. Joy, Chase Brass branch manager at New York, has been placed in charge of the midwestern division, succeeding Mr. Lenz.

Lee S. Hanson, formerly sales promotion manager at Waterbury, Conn., for Chase Brass, will succeed Mr. Joy. A. F. Sheldon is sales promotion manager, with offices at Waterbury, succeeding Mr. Hanson.

Appalachian Wage Conference

The Appalachian Wage Agreement between the Appalachian field and the United Mine Workers of America was signed on April 2. This constitutes a revised two-year scale. The United Mine Workers withdrew their demands for a 30-hour week, two weeks vacation with pay, and a guaranteed minimum of 200 working days per year per man. The new agreement amends the 1934 agreement by giving day men 50 cents per day increase; yardage and deadwork rates an increase up to 10 percent; pick mining rates 9 cents a ton increase; machine loading rates increased 8 cents a ton; cutting rates on track mounted machines were increased 70 percent of the 1-cent per ton increase allowed on short-wall machine rates; mechanical loading and conveyor devices or employes in strip pit production secured 70 cents per day increase. It is estimated by many agencies within the industry that these concessions to United Mine Workers will add a labor charge equal to $85,000,000 annually, which will be in addition to the Social Security tax and Workmen's Compensation insurance. The wage agreement was negotiated through Charles O'Neill and L. T. Putman for the operators, and Philip Murray and Van A. Bittner for the United Mine Workers. John D. Battle secretary of the National Coal Association, in commenting upon the decision, said: "The nation's fuel bill is increased approximately $100,000,000 a year as a consequence of the wage increases * * * The industry cannot absorb these increases in the cost of mining coal. The profit margin under the previous wage scale and without the new costs in other directions, was small at best and non-existent with a vast majority of the producers. If they are to meet these increased costs and remain in business they must, of necessity, obtain substantially higher prices for bituminous coal. Conservatively estimated 25 cents a ton on the average will no more than cover the advance in the cost of production."

The new agreement creates a "Mechanized Mining Commission" which shall consist of the negotiating Committee of Eight for the operators of the Appalachian Joint Wage Conference, namely, M. L. Garvey, J. D. A. Morrow, Charles O'Neill, L. T. Putman, D. A. Reed, W. L. Robison, P. C. Thomas, and L. E. Woods, or their representatives, together with eight officials of the United Mine Workers of America, John L. Lewis, Philip Murray, Thomas Kennedy, Van A. Bittner, Samuel Caddy, P. T. Fagan, James Mark, and John Owen. The Commission shall meet to organize within 60 days, shall elect its chairman and secre-

tary-treasurer and hire such employes from time to time as may be mutually agreed upon. It shall be the duty of the commission to make a joint study of the problems arising from mechanization of bituminous coal production by the use of conveyors and mobile loading machines in the area covered by the agreement, including the problem of displacement of employes. The commission is authorized to take testimony, receive briefs and reports, and generally to collect the information jointly agreed upon. Members of the commission shall pay their own expenses and shall report findings of fact and recommendations to the Appalachian Joint Wage Conference on March 14, 1939.

Test Work On Clay Copper Deposit Starts

The Phelps Dodge Corporation has announced that it will immediately start test and engineering work at its Morenci Branch looking toward the development of the Clay ore body. This Clay deposit is described by government engineers as the largest undeveloped copper reserve in the Southwest. P. G. Beckett, vice president of the company, announces that this is of a strictly experimental nature and that they do not anticipate commercial copper production from the Clay deposit for several years. It is estimated that the experimental work will require some 200 men and will open the Morenci property which has been closed since 1932.

Active Season for Iron Ore

The iron ore industry is anticipating a very active season beginning the latter part of April. They anticipate a tonnage of more than 60,000,000 tons. It is estimated that the Great Lakes in their 1937 season will offer the largest boat freight tonnage in its history.

Hayden Smelter Reopens

After a suspension since 1933, the American Smelting and Refining Company is resuming operation of its Hayden, Ariz., smelter which will handle the output from the Ray Consolidated Copper Company and Nevada Consolidated Copper Corporation. It is understood that the Christmas Copper Company will also send its concentrates to the Hayden smelter for reduction.

Utah Legislature Invites Capital and Labor

Through the unanimous action of the Utah State Legislature, the immense undeveloped resources of the State of Utah, the advantages of worthwhile investments, and the desirability as a place to dwell were called to the attention of the citizens of the United States by a resolution introduced by Senator Mrs. Frank Page Stewart. The resolution as unanimously adopted by the State Senate provides that the State of Utah, through its lawmaking body, welcome and invite the working people and capitalists of the nation to enjoy the possibilities of successful attainment in the industries and undeveloped resources of the State of Utah.

The Great American Prospectors' Association, with tribe headquarters at Roaring Gulch, 22½ East First South Trail, No. 2 level, Salt Lake City, Utah, headed by Harry S. Joseph, "Big Chief," and George H. Watson, "Scribe," drew the resolution and the association was instrumental in obtaining the support of legislators and public officials. At the time the resolution was passed, intense enthusiasm was displayed by members of the lawmaking body, which is indicative of the importance of the measure to the industrial interests of Utah.

The resolution follows:

"WHEREAS the State of Utah is one of the richest states in the Union in natural resources, possessing the largest copper deposit in the world.

"Largest deposit of iron in the world.

"Rich deposits of silver, lead, zinc, and gold.

"Vast areas of carnotite (radium).

"Enormous deposits of alunite (potash).

"Salt beds of enormous acreage.

"Hydrocarbons of untold value.

"Mountains of sulphur and gypsum.

"Coal deposits in character and quality that are unexcelled.

"Untold treasures of wealth in agriculture; and

"WHEREAS in all of its history the people of this state have uniformly extended a hearty welcome to new residents, and have wisely and liberally protected the interest of all classes; and

"WHEREAS the natural resources, advantages and wealth of the state, great as they are and productive as they have always been, are only prospected upon the surface and are chiefly undeveloped; and

"WHEREAS Utah presents the most inviting field in the great West for profitable investment, and as a place to dwell: Now therefore, be it

"Resolved, That this legislative assembly hereby declares its adherence to the policies of the state that has so favorably distinguished it in the past and made possible the progress and advantage attained by its people; and we, its members, hereby forecast a continuance of the same wise, constructive, and conservative policy in the future; and be it further

"Resolved, That the State of Utah by and through its lawmaking body does hereby invite to it the humble and honest laborer who would better his condition; the home-seeker who would set up his household goods in a new country to his better advantage; the investor of capital who would have sound and profitable investment; all under the certain assurance that their rights, liberties, and properties will be jealously safeguarded and held in sacred trust by the government of the state."—(*Western Mineral Survey.*)

—Washington Daily News

Shaft Completed

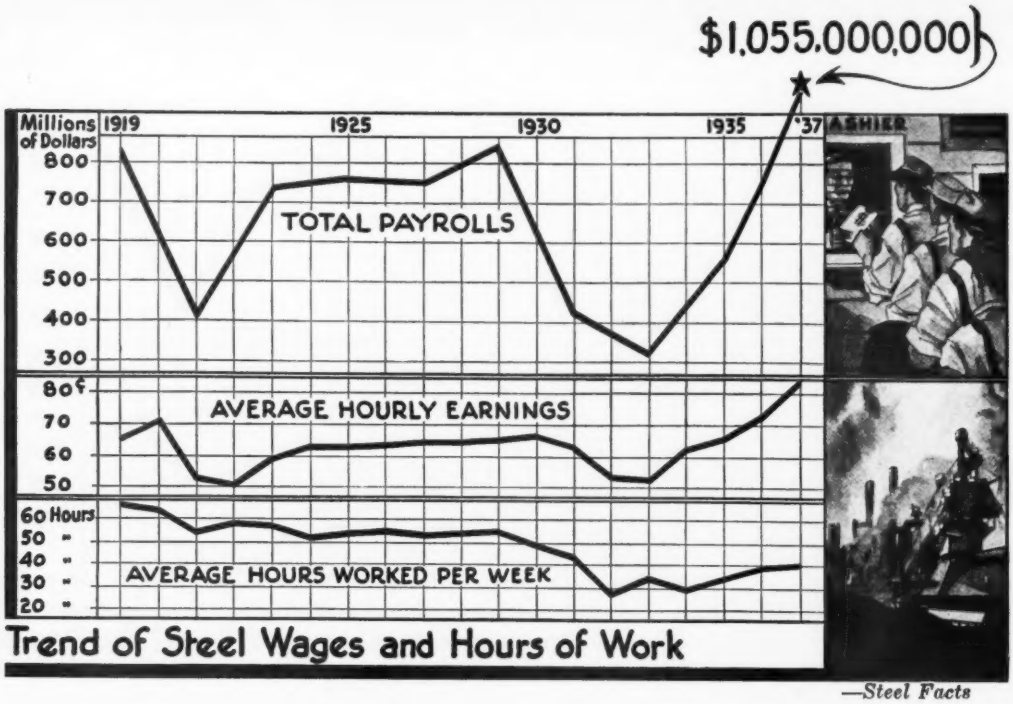
Sunshine Mining Company, spoken of as the world's greatest silver mine, has completed its four-compartment vertical shaft to a depth of 2,850 feet. This is 150 feet below sea level. The capacity of the mill is being increased from 600 to 1,000 tons per day. Mine operations in the past have been greatly hampered by the necessity of bringing all the ore up a two-compartment incline shaft. Cross-cuts to the ore bodies have been opened from the new shaft on the 500, 1,700, 1,900 and 2,300 levels. F. M. Hardy, of Yakima, Wash., president, at the annual meeting April 13, stated to the stockholders that 1937 promises to be the greatest year in the history of the company.

Canada Reduces Tariff On Iron and Steel Products

Canadian importations of United States raw materials, and automobile parts, which now total about $35,000,000 annually, will be facilitated by tariff reductions announced by the Dominion Government, according to press releases and reported in *The Wall Street Journal.*

Canada is removing customs duties on a wide range of American materials in the iron and steel category. Articles affected include bearings; discs of hot-rolled steel, spun or forced, for disc wheels; distributor rotors and cam assemblies; door bumper shoes; electric wiring terminals, sockets and fittings; gaskets; keys for shafting; lock washers; piston ring castings; rails of lock seam section; unplated ventilators; steel bolts; switches for lamps, heaters, and defrosters; vacuum control assemblies; and other materials.

In another classification, the customs duties on American goods are being reduced from 22½, 27½ and 30 percent to 20 percent. These include ammeters;



Trend of Steel Wages and Hours of Work

—*Steel Facts*

axle housings; chassis frames and steel plates; dash heat indicators; fuel pumps, gasoline gauges; locks, electric ignition, steering gear transmission; mouldings of metal; oil filters, oil gauges, radiator hood and other grills; radiator ornaments; speedometers; etc.

In a third category duties are reduced from 30 to 17½ percent on American front and rear axles, brakes, clutches, internal combustion engines, steering gears, and other equipment needed by Canadian manufacturers of motor trucks, buses, and electric trackless trolley buses. Duties on hot-rolled strip of iron and steel are abolished. They formerly were 15 percent plus $8 per ton.

Duties ranging from 25 percent on American body bottom cross members and steel shapes, bumpers, and other equipment needed by manufacturers of motor bus bodies, ambulances, hearses, and trackless trolleys, are also removed.

Interesting Steel Facts

According to *Steel Facts*, steel manufacturing costs have been increased at the rate of nearly $215,000,000 a year by recent wage advances and the soaring prices for many raw materials. The American Iron & Steel Institute estimates these costs exceed by almost $15,000,000 the estimated increase in annual gross revenues of $200,000,000 expected to result from recent advances in steel prices which represents an increase of only one-third of a cent in the price of a pound of steel.

They also estimate that the American steel worker received an average of 67 cents an hour in their pay envelopes last year, compared with an average of only 28 cents an hour for steel workers in eight foreign steel producing countries for substantially the same period. This is 140 percent above the average foreign wage. The total steel payrolls are now at the rate of over $1,055,000,000 a year, the highest level in the history of the industry. Also at the highest figure on record are the average hourly earnings and the industry's wage earning employes, which is currently at 83½ cents per hour and equivalent to nearly $7 per eight-hour day. Approximately 550,000 workers are employed.

—*Steel Facts*

The King Solomon Mine at Bakersfield, Calif., has recently put in a new cyanide plant and have been conducting major improvements in their operating practice.

Utah Mining Legislation

A. G. Mackenzie, secretary of the Utah Chapter of the American Mining Congress, Salt Lake City, has recently released a complete summary of bills passed by the Utah Legislature of 1937 and approved by the Governor of the state, which have an immediate and direct interest to those engaged in metal mining. These include payroll deductions, deputies in labor strikes, registration in labor strikes, registration of labor unions, labor disputes, workmen's compensation, right to work and anti-boycott repeal, payment of wages, labor relations act, hours of labor, mine trespass, Use Tax Act, metal mine tax, taxation of securities formerly exempt.

The Kennecott Copper Corporation produced 578,943,053 pounds of copper in 1936. These figures include the Chile and Alaskan properties of the corporation.

Interesting Facts

Western Mining News under a department "Did You Know That" says . . . "The American nickel contains three times as much copper as nickel. Nearly 3,000,000 pounds of copper are used annually in minting U. S. coins, including gold and silver coins. The familiar penny is really made of bronze containing 95 percent copper and 5 percent tin and zinc." . . . "In a telephone conversation between New York and San Francisco 800 tons of copper wire are in use."

Metaline District Active

Mining in the Metaline district, in the northeastern corner of the state of Washington, is developing rapidly. The American Zinc Company, which is opening the property of the Metaline Mining and Leasing Company, by a 4,600-foot river level tunnel, started in April a new development project. This is at the Grandview mine, two and a half miles distant, across the Pend Oreille River. The American Zinc Company controls Metaline Mining and Leasing Company, and more recently, it has secured control of Grandview Mines Company by lease and option. Grandview has a 250-ton modern mill and the American Zinc Company wanted the use of this to treat the ores it is confident of developing in Metaline Mining and Leasing grounds. Its option on Grandview also provides for developing the Grandview ore bodies by diamond drilling. This work started April 19. The American Zinc Company spent two years in diamond drilling the property of the Metaline Mining and Leasing Company. It seems disposed to acquire all the zinc concentrates it can secure in the Metaline district. D. I. Hayes, of St. Louis, western manager of the American Zinc Company, is making Spokane his headquarters and residence.

Pend Oreille Mines and Metals Company has been greatly handicapped this spring by lack of power but this will soon be overcome with the completion of the company's new plant, which will give it 2,000-h.p. This company controls the Reeves-McDonald Company, which has important zinc holdings 10 miles down the Pend Oreille River, and this spring initiated further development of this mine. A power line is being strung from the new power plant to the mine, which is on the Canadian side of the boundary line. A 1,000-ton concentrator is contemplated for the Reeves-McDonald mine, which it is said can be quickly put into production.

Industrial Leaders to Discuss Commodities

Some of the nation's outstanding industrial leaders will lead discussion on 14 commodities, including steel, coal, petroleum, aluminum, copper, lumber, tin, lead, zinc, refractories coke, paint, glass, and paper, at the 22nd international convention of the National Association of Purchasing Agents, to be held in Pittsburgh, Pa., May 24 through May 27, it has been announced by Thomas D. Jolly, chairman of the Program Committee.

Speakers and their subjects which have been made public are: "Coke and Other By-Products of Coal," by C. J. Ramsburg, vice president of the Koppers Coal Company, Pittsburgh; "Petroleum and Its Products," by Dr. Paul D. Foote, executive vice president of the Gulf Research and Development Corporation, Pittsburgh; "Refractories," by John D. Sullivan, chief chemist of the Battelle Memorial Institute, of Columbus, Ohio; "Aluminum," by S. K. Colby, vice president of the Aluminum Company of America, Pittsburgh; "The Steel Industry," by J. H. Van Deventer, editor of *Iron Age;* "Copper," by Albert E. Petermann, vice president of the Calumet & Hecla Consolidated Copper Company of Michigan, New York City; "Lumber," by Henry J. Eckstein, president of Foresta Factors, Inc., New York City; "Tin, Lead, and Zinc," by C. S. Trench, editor of the *American Metal Market,* New York City.

—Washington Daily News

C. A. Kelley, president of the N. A. P. A., and purchasing agent for the Nevada-California Power Company, will preside at the opening session of the convention in the William Penn Hotel on Monday morning, May 24. I. E. Walton, purchasing agent for the Heppenstall Company, Pittsburgh, is General Chairman of the Convention Committee.

Between 1,200 and 1,400 members of the N. A. P. A. are expected to attend the convention. With complete space sold out weeks ago, the Inform-A-Show will have 115 booths in the Chatterbox and sub-floors of the William Penn Hotel.

Copper Tariff Commissions

The governors of the copper mining states of the West are appointing State Copper Tariff Commissions to work towards extension of the excise tax on imports of foreign copper. A. G. Mackenzie, secretary of the Utah Chapter of the American Mining Congress, has been selected by Governor Henry H. Blood of Utah as Chairman of the State Commission. Other members of the board are Harry S. Joseph, John M. Wallace, A. S. Brown, and C. T. Van Winkle. Governor Miller of Wyoming has appointed a Copper Tariff Board consisting of Charles B. Stafford, H. L. Kuyendall, and S. H. Knight. The Nevada board, appointed by Governor Kirkman, consists of Alfred M. Smith, John A. Fulton, W. H. Blackburn, Henry M. Rives, and Ott F. Heizer. The Arizona commission recently appointed by Governor Stanford will include Sam Morris, Cleve VanDyke, Hoval A. Smith, John G. Flynn, and L. B. Orme.

Sullivan Mining Company Increases Capacity of Zinc Reduction Plant

Directors of Sullivan Mining Company, jointly owned by Bunker Hill & Sullivan Mng. & Conc. Company and Hecla Mining Company, are planning increased capacity at the electrolytic zinc reduction plant. Whether this increase will be 100 or 50 percent of present capacity has not yet been determined. The plant operated at full capacity throughout 1936, producing 21,223 tons of zinc and 180 tons of cadmium.

Zinc Industry in 1936—Advance Summary

The production of distilled and electrolytic zinc at zinc reduction plants in the United States in 1936 amounted to 534,341 short tons, valued at $53,434,000, increases of 19 percent in quantity and 35 percent in value from the production of 449,284 tons, valued at $39,537,000, in 1935, according to E. W. Pehrson and H. M. Meyer, of the United States Bureau of Mines. Of the total for 1936, 491,803 tons were primary metal from domestic ore, 329 tons were primary metal from foreign ore and 42,209 tons were secondary metal. Figures on the quantity of secondary zinc recovered by remelting at plants that treat scrap materials only are not yet available.

In 1936 the total production of primary zinc included 364,957 tons of metal recovered by distillation and 127,175 tons recovered by electrolysis. Pennsylvania contributed the largest output of primary zinc of any state with an output of 150,425 tons all produced by distillation. Illinois had the second largest production of primary distilled zinc, with 81,174 tons, and Oklahoma ranked third with 62,963 tons. Distilled zinc was recovered also in Arkansas, Texas and West Virginia. Of the electrolytic zinc production Montana contributed 105,952 tons and Idaho 21,223 tons.

The supply of new zinc available for consumption in the United States in 1936 amounted to 525,644 tons, an increase of 18 percent over the available supply of

445,707 tons in 1935 and the largest recorded since 1929.

At the end of 1936 stocks at primary smelters and electrolytic refineries were 55,500 tons, compared with 90,539 tons on hand December 31, 1935, a decrease of 39 percent. Stocks at the end of 1936 were the lowest recorded since 1928.

In the early months of 1936 the average monthly quoted price for slab zinc at St. Louis continued the upward trend begun in 1935. It receded somewhat in the summer months but moved sharply upward in the final quarter of the year. The monthly average was 4.85 cents a pound in January, 4.90 cents in March through May, 4.79 cents, the low point of the year, in July and 5.28 cents in December. The average for the year was 4.90 cents compared with 4.33 cents in 1935.

The average value received by producers for all grades of zinc was reported as 5.0 cents a pound in 1936 compared with 4.4 cents in 1935.

Mineral Industries Art Gallery

Mineral Industries, published by the Pennsylvania State College, in its issue of March, 1937, urges a mineral industries art gallery. They say that the School of Mineral Industries and the Experiment Station at Pennsylvania State College have 104 original oil paintings, the only collection of its kind in the world. This gallery shows the activities in Pennsylvania's far-flung mineral industries and constitutes a record of the mines, the mills, the oil wells, which form the vast mineral wealth that lies beneath the surface of the state of Pennsylvania. These paintings were recently appraised at more than $25,000, and all of them are gifts to the college from artists, industries, alumni, or friends. This gallery was organized during the past six years through the efforts of Dean Edward Steidle.

The Ohio Copper Company has announced that with the consummation of the sale of surface rights to the Utah Copper Company that it will build a 1,000-ton combination concentrator for the purpose of treating its vast tailings remaining from the operation of its Lark Mill.

The state of South Dakota will, effective July 1, 1937, introduce a tax on gold production which will increase the present tax of 4 percent to 6 percent. The law carries an exemption for the first 50,000 tons.

Annual Dinner U. S. Coal & Coke Co.

The United States Coal & Coke Company recently held its twenty-seventh annual meeting of the Association of Employes. Among the prominent guests were officials of the United States Steel Corporation and Thomas Moses, president of the H. C. Frick Coke Company. Harry M. Moses, general superintendent of the West Virginia and Kentucky division of the company, presided as toastmaster. Speakers included F. R. Walton, president of the United Supply Company; R. H. Watson, vice president, United States Steel Corporation; Irvin S. Olds, director of United States Steel Corporation; W. J. Jenks, president of the Norfolk and Western Railway; N. P. Rhinehart, director of the West Virginia Department of Mines; and Clay F. Lynch, general superintendent of the H. C. Frick Coke Company.

COALDALE BREAKER

Replaced wood breaker, destroyed by fire May, 1921.
Started operating September, 1922.
Approximate cost—$1,250,000.
Capacity—225 *mine cars per hour*, 1,800 *per day.*
Height—200 *ft.; length*—238 *ft.; width*—124 *ft.*
Structural steel—3,500 *tons.*
Window lights—27,000 *sq. ft.*
Concrete floors—50,000 *sq. ft.*
Total horsepower—2,610, *all electrically driven, except pumping plant.*
Jigs—54; *concentrating tables*—8.
Background—Headframe, No. 8 *shaft; boilerhouse.*

The Department of Commerce, Bureau of Foreign and Domestic Commerce, has released a pamphlet on "Exports and Imports of Copper and Copper Products" for February, 1937.

The annual 1937 meeting of the National Academy of Sciences was held in Washington, D. C., April 26.

Charles Will Wright, in *Mineral Trade Notes*, issued by the United States Bureau of Mines in March presents, "Italy's Ability to Produce and Capacity to Consume Mineral Raw Industries in 1936." Mr. Wright has some interesting comments concerning Government assistance to mining industries.

Short Course in Coal Utilization

The College of Engineering, University of Illinois, will give a "Short Course in Coal Utilization, May 25, 26, 27, 1937. In their announcement they give as the purpose of this course the following: "To present an educational program of technical and practical information pertaining to coal and its efficient utilization for the benefit of those engaged in mining, preparing, marketing and using coal, as well as those manufacturing and distributing machinery for the preparation and utilization of coal."

In conjunction with the course will be held the Fifty-first Annual Meeting of the Illinois Fuel Merchants Association.

Recovery Costs

Authorizations and commitments of the Reconstruction Finance Corporation in the recovery program to March 31, including disbursements of $886,664,631.56 to other governmental agencies and $1,799,984,929.89 for relief, have been $11,446,908,127.59. Of this sum, $1,379,802,167.35 has been canceled and $748,997,335.12 remains available to the borrowers and to banks in the purchase of preferred stock, capital notes and debentures. The relief disbursements include $299,984,999 advanced directly to states by the Corporation, $499,999,-

930.89 to the states upon certification of the Federal Emergency Relief Administrator, $500,000,000 to the Federal Emergency Relief Administrator under provisions of the Emergency Appropriation Act—1935, and $500,000,000 under the provisions of the Emergency Relief Appropriation Act—1935. Of the total disbursements, $6,434,588,331.58 was expended for activities of the Corporation other than advances to governmental agencies and for relief, and of this sum $4,537,252,003.65, or approximately 71 percent, has been repaid.

Trip Around the Globe

A trip around the globe with visits to the principal fuel technology and chemical research laboratories of the world will be made this spring by Dr. H. H. Lowry, director of the Coal Research Laboratory at the Carnegie Institute of Technology.

Dr. Lowry will sail from New York on the *Britannic* and will visit England, France, Switzerland, Belgium, Holland, Germany, Czechoslovakia, Poland, the U. S. S. R., Manchuria, China, and Japan before returning to the United States in July.

In all these countries work is being done on the scientific mysteries of coal. Fuel technologists throughout the world have no organized clearing house for information about coal except the international conferences on bituminous coal, three of which have been sponsored at the Carnegie Institute of Technology under the leadership of Dr. Thomas S. Baker, now president emeritus of that institution.

The most recent of these conferences was held in 1931 in Pittsburgh and one of the objects of Dr. Lowry's trip will be to find out what new information has been gained about coal in the intervening years, and whether or not there is a need for a fourth conference. The Coal Research Laboratory at Tech has had numerous visitors from all over the world who are interested in the work of this outstanding example of independent scientific study. Dr. Lowry will visit many of the scientists who have made the trip to his laboratory in Pittsburgh.

Dr. Lowry will go to London at the invitation of Sir Harold Hartley, chairman of the British Fuel Research Board, who has visited and spent some time at the Tech laboratory. Dr. Lowry has been invited to address the Institute of Fuel and the Coal Research Club in London, and a dinner in his honor will be given by the Institute of Fuel, of which Sir Philip Dawson, M. P., is president. While in England he will also inspect laboratories and plants of the British Imperial Chemical Industry at Liverpool and Billingham, and the laboratories at the University of Sheffield.

In Paris, Dr. Lowry will meet a number of fuel technologists who have taken part in the coal conferences at Pittsburgh, and in Switzerland he will inspect the Technische Hochschule at Zurich. Following brief visits to Brussels, Liege, and Eindhoven, where he will see the laboratory of the Phillips Lamp Works, which is considered one of the outstanding research laboratories in Europe, he will go to Mülheim to visit the famous Kaiser Wilhelm Institute, headed by Professor Franz Fischer, brilliant German scientist who has taken active part in the Tech coal meetings.

Because of her lack of petroleum Germany has worked intensively on processes for making oil from coal, and Dr. Lowry will visit the new plant for coal hydrogenation at Essen, the latest attempt to give the nation an adequate supply of oil within its own boundaries. He will also visit in Germany the Society for Coal Technology at Dortmund, the Leuna Works of the I. G. at Leipzig, and the Society of German Engineers at Berlin.

Leaving Berlin, he will inspect the Coal Research Institute at Prague, and the Natural Gas Institute at Warsaw before going to Moscow, the center of scientific activities of the U. S. S. R., where considerable and very important work on coal is being done. He will also visit the Scientific Research Institute at Kharkov, and three laboratories at Leningrad.

From Russia he will make the long trip to Dairen in South Manchuria to visit the research laboratory of the South Manchurian Railroad. From there he will go to Peking, his birthplace, where he will visit the National University and Sin Yuan Fuel Laboratory, where work is being done to discover better uses for China's vast coal reserves.

After visits to Nanking, Shanghai, Kobe, and Kyoto, Dr. Lowry will go to Tokio where he will visit Professor Y. Oshima, director of the Imperial Fuel Research Institute, and a fellow alumnus of Princeton. Professor Oshima visited Tech last fall, and his laboratory has taken an active part in the coal conferences.

Dr. Lowry will sail from Yokohama on July 2, arriving in San Francisco on July 14.

Recent announcement has been made that Edward Clark, president of the Homestake Mining Company, will call a meeting soon to consider splitting stock five for one. There are 250,000 shares of stock with a par value of $100. In 1936 Homestake reached an all-time high with its stock selling at $544 per share.

Annual Meeting

The 1937 convention of the Rocky Mountain Coal Mining Institute will be held in Denver on May 31, June 1 and 2. Committees are being appointed to work out the various plans.

Changes in Personnel

The Phelps Dodge Corporation announces that George B. Lyman, of Bisbee, has been transferred to Jerome, Ariz., where he has been promoted to superintendent of the underground department of the United Verde copper mine.

R. E. Tally, Jr., mining engineer, has been transferred to Morenci, Ariz. E. M. Alenius, Jerome, pit foreman at United Verde mine, will be transferred to Morenci, Ariz. J. B. Pullen of the Phelps Dodge Corporation, has been appointed chief mining engineer at United Verde branch. Carl Fuller has been appointed mine foreman at United Verde. The above appointments have been announced by Wm. A. Sabin, manager of the United Verde copper mining branch at Jerome, Ariz., Phelps Dodge Corporation.

Illinois Mining Institute

The nineteenth annual summer meeting and boat trip of the Illinois Mining Institute will be held on the S.S. *Golden Eagle*, leaving St. Louis, Mo., on Friday, June 11, returning to St. Louis on Sunday, June 13. The Program Committee is now preparing a splendid program, details of which will be announced in the near future.

Jardine Mining Company, operating a large gold property near the northern entrance of Yellowstone National Park, held its annual stockholders' meeting on April 20. C. E. Nighman, formerly engineer with the Anaconda Copper Mining Company, has been made general manager of the company.

Hold Safety Meetings

The Southern Wyoming Coal Operators Association will hold three special coal mine safety meetings during April. They will be under the direction of Lyman Fearn, safety engineer for the Association.

—Washington Daily News

Annual Coal Wage Boost

Duncan Kennedy, secretary of the Kanawha Coal Operators Association, estimates that the annual wage increase to southern West Virginia miners alone will amount to $15,000,000, and that for the state of West Virginia as a whole will reach the interesting sum of at least $20,000,000.

Better Times Ahead for Anthracite

Alan C. Dodson, president of Weston, Dodson & Co., Incorporated, in a recent statement said: "That he feels better conditions are ahead in the anthracite field through the elimination of many of the present evils." He was optimistic in his comments concerning the work of Governor Earl's Fact Finding Commission, which will endeavor to take care of some 6,000 men who are legal residents of the anthracite field and now engaged in the mining of stolen coal. He asserted that the present major problem of the anthracite industry appears to be keeping prices on the competitive basis with other fuels. He stated that the 35-hour week which becomes effective May 1, means the labor increase cost of from 25 to 40 cents a ton; the Social Security Act will boost mining costs at least 10 cents a ton; while possible new Pennsylvania State Workmen's Compensation Laws, may also become a factor to be considered. Mr. Dodson feels that a way must be found to absorb these costs and to protect anthracite's competitive position.

Safety in Handling Explosives

In 1936, for the tenth successive year, large quantities of dynamite and black powder were transported by the railroads of the United States and Canada without injury to a person or damage to property. This safe movement of blasting explosives has just been made known in an annual report issued in New York by W. S. Topping, chief inspector of the Bureau of the Safe Transportation of Explosives and Other Dangerous Articles, which operates under the direction of the American Association of Railroads.

The bureau was organized about 30 years ago by the carriers in an effort to minimize only accidents with explosives in transit—occurrences not uncommon previous to 1907. Since then, the scope of the bureau has been enlarged to include the regulation and supervision in shipment of a diversity of products designated as "other dangerous articles." Last year, in explosives alone, the regulations of the bureau governed the transportation by rail of the greater part of the more than 376 million pounds of dynamite and black powder manufactured in the United States.

"With the general improvement of business, there has been an increase in the tonnage of dangerous commodities of all kinds," the report points out. "But the principal shippers of explosives and other dangerous articles are always cooperating with the bureau in the application and enforcement of the rules for safety. They are as much interested as are the railways in preventing explosions, fires or personal injuries."

New Iron Ore Producer

The Charleston Iron Mining Company, of Hibbing, Minn., announces plans to bring a new Mesaba Range iron mine into production. E. F. Remer, of Hibbing, Minn., is president of the company. Equipment for stripping the overburden is now being moved onto the property and it is anticipated that the new mine will ship about 150,000 tons during the 1937 season.

New Utah Metal Tax

The State of Utah has a new tax law covering metalliferous mines. Taxes formerly were based upon three times the gross proceeds from produced ore. The new law changes this to two times gross proceeds and imposes a 1 percent occupational tax on gross value of the ore.

The Missouri School of Mines, in conjunction with the United States Bureau of Mines, offers three research fellowships, two of which are now open. These fellowships carry an income of $800 for 10 months, with the final Ph.D. degree.

You are Invited—

- **To become acquainted with Appalachian Coals, Inc. . . . pioneer marketing agency of the bituminous coal industry, when you visit Cincinnati May 17-21, 1937.**
- **To make A C I Headquarters in the Transportation Building a meeting place for you and your friends from the Southern high volatile districts.**
- **To meet the officials of the A C I producers and agents, many of whom will attend the convention and exposition.**
- **To inspect the service facilities of A C I and to learn more about our marketing methods.**

APPALACHIAN COALS, INC. — STABILITY · QUALITY · SERVICE — W. VA. · VA. · KY. · TENN. · ACI

Appalachian Coals, Inc.

TRANSPORTATION BUILDING · CINCINNATI, OHIO

Two Major Events !!

The American Mining Congress is responsible for two great Conventions and Expositions for 1937—one for the Coal Mining Industry; the other for the Metal Mining Industries.

Coal's Convention and Exposition

Music Hall, CINCINNATI, Ohio
May 17-20, 1937

Metal Mining's Convention and Exposition

Minerals Building, SALT LAKE CITY, Utah
September 6-9, 1937

These two meetings offer the maximum return to those interested in the sound and efficient development of our mineral industries.

May
September
1937

THE AMERICAN MINING CONGRESS
Munsey Building
Washington, D. C.

—*Personals*—

Cornelius F. Kelley, president, Anaconda Copper Mining Company, has accepted the chairmanship of the nonferrous metals division of the Salvation Army's 1937 campaign for $600,000 in maintenance funds. This division is one of 55 similar industry and business sections.

Charles Dorrance has been elected vice president in charge of operations of Consolidation Coal Company, with headquarters at Fairmont, W. Va. He succeeds to the position made vacant by the death several years ago of Frank R. Lyon. Mr. Dorrance is a graduate of Lehigh University and has long been identified with the anthracite industry, serving in various capacities with the Lehigh Valley Coal Company, Lehigh Navigation Coal Company, and the Delaware & Hudson Company. He served for several years as consulting engineer to a number of anthracite companies. In 1931 he was appointed Federal Receiver for some smaller companies, and elected president of the Penn Anthracite Collieries Company, which position he now leaves to assume his new duties.

Carl J. Trauerman, president of the Montana Stock & Bond Company and the Mining Association of Montana, is in the East, making his headquarters at the Technology Club of New York City. He visited Washington, D. C., before returning to Butte. Mr. Trauerman also is president of Basin Goldfields, Ltd., and the Ruby Gulch Mining Company, prominent Montana gold producers.

Louis S. Cates, president, Phelps Dodge Corporation, recently declared that he is optimistic concerning the future of the copper industry. He looks to the Government's housing program and capital expenditures from the public utilities to greatly increase copper consumption. He expressed the opinion that the domestic price for copper would stabilize at between 15 and 14 cents a pound.

R. M. Marshall, secretary of the Woodward Iron Company, Woodward, Ala., for the past two years, has also been elected vice president.

John T. Ryan, Jr., was recently appointed sales engineer for the Mine Safety Appliances Company.

Morris Greenwals, formerly with the Union Pacific Coal Company, has joined the staff of the Tintic Standard Mining Company.

Kenneth Leith is in Costa Rica on a professional trip. His headquarters are at Amherst, Va.

M. C. Lake has been in Arizona on professional business.

Clayton G. Ball, geologist and coal technologist formerly with the State Geological Survey of Illinois and more recently with the Bell and Zoller Coal and Mining Company, has become associated with Paul Weir, consulting mining engineer, 307 North Michigan Avenue, Chicago.

E. R. Clark, Jr., has joined the staff of the Anaconda Copper Mining Compnay.

H. A. Holbrook has joined the New England staff of Anthracite Industries.

R. A. Wagstaff, assistant manager of the Utah Department, American Smelting & Refining Company, is in California recuperating from a recent illness.

Charles H. Matthews has been appointed electrical and mechanical engineer for the Susquehanna Collieries Company.

M. E. Newlove has been appointed superintendent of the North Star Mine, Grass Valley, Calif.

D. W. Buchanan, president of the Old Ben Coal Corporation, has returned to Chicago after spending considerable time in New York City on matters relating to the wage conference.

Stanly A. Easton has been named president and manager of the Douglas Mining Company, a subsidiary of the Sullivan Mining Company. **J. F. McCarthy** is vice president, and **Leo Hoban**, secretary-treasurer of the company. They are planning extensive development of the property.

George Kearns, for many years identified with the George Kearns Coal Company at Cincinnati has liquidated his company and will hereafter devote his time to the sale of stocks and bonds.

Cleveland E. Dodge, vice president of the Phelps Dodge Corporation, was a Washington visitor during April.

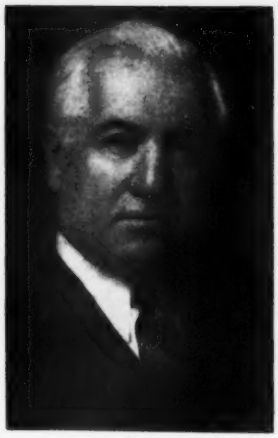
W. P. Neekamp, of the Marketing Division of Appalachian Coals, Inc., recently assisted in organizing a similar marketing association for the smokeless field to be known as Smokeless Coals Corporation.

C. W. Van Law has recently been placed in charge of production for the Pardners Mines Company at their Nevada mines.

R. L. Ireland, Jr., recently elected vice president of the Hanna Coal Company, is again at his Cleveland office after spending several weeks in New York with the Wage Scale Conference.

Howard I. Young, president of the American Zinc Lead and Smelting Company, conferred with officials of the American Mining Congress at their headquarters on April 17, discussing matters in relation to the coming Cincinnati and Salt Lake conventions of this organization, of which he is president.

Cadwallader Evans, Jr., has been elected vice president, The Hudson Coal Company. He assumes the responsibilities of the late A. M. Fine.



Donald A. Callahan

Donald A. Callahan, of Idaho, a director of The American Mining Congress, is in Washington.

W. J. O'Connor, manager of the Utah Department of the American Smelting and Refining Company, is chairman of the General Committee on Arrangements for the annual meeting of the Western Division of the American Mining Congress, to be held in Salt Lake City in September.

Louis Ware, president of the United Electric Coal Companies, recently attended a directors' meeting of his company in New York City.

B. M. Concklin has been vacationing at Phoenix, Ariz.

Frederick C. Gilbert, prominent Butte metallurgist and mining engineer, recently was elected secretary of the Montana Section of the A. I. M. E. Mr. Gilbert, who is at present at the Tudor Hotel in New York City, also is secretary of the Mining Association of Montana.

A. D. Carlton, Cleveland-Cliffs Iron Company, recently undertook a three-weeks' trip through the coal fields in the interest of the American Coal Sales Corporation of which he is president.

Charles E. Bockus, president of the Clinchfield Coal Corporation, recently spent some time at his company's properties at Dante, Va. Mr. Bockus' headquarters are in New York City.

S. R. Elliott, manager of mines for the Cleveland-Cliffs Iron Company, with Mrs. Elliott, recently returned to Ishpeming, Mich., after a vacation trip to Honolulu.

F. H. Woods, president of the Sahara Coal Company, has returned to his Chicago office after an extended trip to Arizona.

W. W. Dartnell, formerly of the Valley Camp Coal Company, has returned to Morgantown, W. Va., after an extended vacation which included a trip to Florida and to New Hampshire.

E. C. Congdon has returned to Duluth, Minn., after an extended trip to Arizona and California.

Joseph H. Nuelle recently was elected president of the Lehigh Navigation Coal Company.

Harry M. Moses, general superintendent of the United States Coal & Coke Company, presided as toastmaster at the annual meeting of the Association of Employes of this company.

James S. Douglas, president of the United Verde Extension Mining Company, has been spending some time at Los Angeles, Calif.

S. D. Warriner, for many years prominently identified in the anthracite industry, has resigned the presidency of the Lehigh Navigation Coal Company and will become chairman of the board of directors.

Julian D. Conover, secretary of the American Mining Congress, addressed the opening session of the American Zinc Institute at its annual meeting in St. Louis on April 26.

E. P. Mathewson, professor of metallurgy at the School of Mines and Engineering, University of Arizona, was recently in New York City.

Herbert R. Smith, executive vice president, Maryland Coal and Coke Company, has returned to his office after a vacation trip to Bermuda.

Carl Zapffe

Carl Zapffe was the principal speaker at the Silver Jubilee celebration of the Rotary Club.

Charles F. Ayer, president of the Magma Copper Company, has returned to New York after visiting his company's properties at Superior, Ariz.

R. W. Higgins, president of the Consolidated Coppermines Corporation, arrived in New York early in April after an extended South American tour.

Floyd Alexander has been appointed superintendent of the Yellow Aster plant of the Anglo-American Mining Corporation at Randsburg, Calif.

Wm. B. Daly

Wm. B. Daly, general manager of mines of the Anaconda Copper Mining Company, has returned to his headquarters in Butte, after spending several months in the southwest.

LeRoy Salsich, president of the Oliver Iron Mining Company, is at St. Petersburg, Fla., enjoying a brief vacation.

Wm. T. Wearne has joined the staff of the Inland Steel Company.

John Gilbert, president of Madeira-Hill and Company, who has been recuperating from an operation, is again at his desk.

G. Webb Shillingford, president of the Empire Coal Sales Corporation, has been in Florida for several weeks.

Harry LaViers, vice president of the South-East Coal Company, was in New York during the wage agreement conferences.

R. S. Burton has joined the staff of the Cerro de Pasco Copper Company. He formerly was connected with the Empire Zinc Company in Colorado.

George E. Herron has joined the organization of the Harris Coal Corporation, where he will serve in the capacity of vice president.

Among the callers at the Washington headquarters of The American Mining Congress during the month of April, were: **W. H. Peter**, The M. A. Hanna Company; **J. J. Sellers**, Virginia Coal & Iron Company; **W. W. Dartnell**, Morgantown, W. Va.; **Eugene McAuliffe**, president, Union Pacific Coal Company; **William F. Loach**, Wolf Tonhue Mining Company; **Cleveland E. Dodge**, Phelps Dodge Corporation; **A. D. Bryant**, Cerre de Pasco Copper Company.

—*Died*—

Walter Fitch, leader in the development of the Tintic-Mining District of Utah, died at his home in Salt Lake City, Utah, April 23. He was president of the Chief Consolidated Mining Company, and a director of the Utah Chapter, The American Mining Congress. Mr. Fitch was born in England, coming to the United States when about 20 years of age, where he became interested in the Michigan Copper Mining District. He first came to Salt Lake City in 1903 as manager of the United States Smelting Refining and Mining Company, but returned to Michigan to serve as superintendent of the Calumet & Hecla Mining Company. He returned to Utah in 1908 and has since that time been actively identified with the Tintic District. He was a member of the American Mining Congress and of The American Institute of Mining and Metallurgical Engineers.

Andrew M. Fine, vice president of The Hudson Coal Company, died April 20, at his home in Scranton.

Mr. Fine entered the employ of the Delaware & Hudson Railroad Company 45 years ago in its Coal Sales Department. He became auditor of the Railroad Company in 1903 and with the separation of the coal interests from the railroad company, joined The Hudson Coal Company and became its vice president in 1919.

PETER F. LOFTUS

Consulting Engineers

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DIAMOND CORE DRILLING

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Our specialty—Testing bituminous coal lands
Satisfactory cores guaranteed

Industry's Musketeers

Why The American Mining Congress? Why ANY association?

There are large numbers of associations all classified as "mining." Why should they exist, and why should the mining man support any or all of them?

The answer is not available in words of one syllable. There is a multiplicity of reasons for the Mining Associations, state and national, but chiefly they exist because they have earned support.

The Associations are the modern "Musketeers" of industry. No matter what the attack from within or without, their slogan has successfully been "one for all, and all for one." For, in the final analysis, it is the cohesiveness of an industry that protects it against undue interference.

There is a place for all legitimate mining associations. The State Association which represents the industries within the State; the National Association representing each branch of industry that combines the best interests of those within that branch, **and**

THE AMERICAN MINING CONGRESS

which brings together ALL BRANCHES in accord upon all problems of mutual and common interest. . . . Which speaks impartially for THE MINING INDUSTRY—NOT for coal, NOT for copper, NOT for iron, NOT for gold and silver, NOT for lead and zinc . . . but copper AND iron AND lead AND zinc AND coal AND gold and silver . . . the **common denominator** for mining problems.

Unless minerals can speak with a united voice upon problems of common origin and application, and speak with authority and without prejudice and partisanship, they cannot command the attention and consideration to which their economic importance entitles them. 25-million persons CAN speak in behalf of minerals. They CAN be heard around the world.

THE AMERICAN MINING CONGRESS is the mouthpiece, the spokesman, for ALL the industry. It is FOR organization, state and national, of each of the interests of the industry. It offers its services to these organizations.

With the Manufacturer

Roto-Louvre Dryers Now a Link-Belt Product

Announcement is made by Link-Belt Company, 300 W. Pershing Road, Chicago, that it has acquired the manufacturing and sales rights for North America for the Dunford & Elliott roto-louvre dryer, of which many installations have been made in Europe, Canada, and Japan. It is being offered for the drying of all types of granular materials, coarse or fine, or of irregular shape, size, and consistency; all types of crystals and powders manufactured or used in the chemical industry; factory refuse and waste; vegetable products; etc. It has also been employed as a heating or cooling unit; as a general reaction vessel; and for evaporating liquids on a solid substance. Among the materials handled are coal, coke, clay, fertilizers, grain, ores, cereals, salt, sand, sugar, wood chips and bark, cement clinker, and all manner of chemicals.

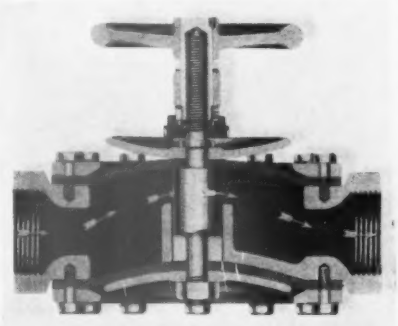
The dryer is described briefly as a mechanically rotated horizontal drum with a series of internal channels near the circumference, into which hot air is admitted from a fan. These channels are covered by tangential plates which overlap in such a way as to leave a gap for hot air to pass from the channels into the inside of the drum and into the material contained therein, and at the same time to prevent any materials from falling backwards. The channels are tapered so as to give the inner lining of the drum a gentle slope from the feed end to the discharge end. As the drum revolves, fresh channels come underneath the charge, but, as the hot air can only enter the channels when they are actually underneath the charge, all the gases must pass upwards through the bed of material.

New Motion Picture on Hard-Facing

A new motion picture on hard-facing which shows in detail, the process of adding wear-resisting surfaces to steel parts, is now available for showing to interested organizations or groups. This highly instructive motion picture has been produced by Haynes Stellite Company, a unit of Union Carbide and Carbon Corporation and can be obtained for showings through representatives of either Haynes Stellite Company or The Linde Air Products Company. The film begins with a brief description of what hard-facing is and how it is done. The scene then shifts to a series of unique views of the application Haynes Stellite with the oxy-acetylene flame. The correct manner of applying this cobalt-chromium-tungsten alloy is effectively shown. Following this are views of various industrial applications of hard-facing, such as its use on steam valves for high-temperature, high-pressure service, automotive valve seat inserts, cement grinder rings, and dipper bucket teeth. Throughout the film, emphasis is placed on effective methods of application and the economies resulting from the use of hard-facing.

New Valve

A new, Balanced Diaphragm Valve, developed and manufactured by the McAlear Manufacturing Co., has the feature of closing off tight, repeatedly, in service on fluids or gases containing foreign matter. Being balanced, it will open or close easily. There are no bellows or stuffing boxes, thus preventing all friction. When used on throttling service, there are no bad effects from wire drawing. This valve need not be removed



from the line to change the diaphragm which can be supplied of various compositions to take care of air, water, gas, acids, or alkalis. Made of either ferrous or non-ferrous materials, it can be suitably lined for all acids and alkalis, hot and cold. It will operate in any position, will not damage from freezing, and can be either hand or motor operated. Made in sizes of two inches and larger.

Enlarging Plant

E. D. Bullard Company, manufacturers of safety equipment for mines and industry, are enlarging their Salt Lake City office and will be located, after April 1, at 14 Post Office Place in that city.

According to E. W. Bullard, president, the move is in line with the rapid expansion in this territory. "With the increase in men at work in the mines, smelters and industrial plants of the intermountain states, we have found demand for safety materials has grown to the point where our previous facilities have been inadequate. When a buyer orders safety equipment, he wants it promptly. This prompt service will be hastened by our move.

On April 1, the Chicago office of this company moved to 133 North Sacramento Boulevard, that city, where G. M. Glidden, Chicago manager, reports increased space and improved facilities for handling a larger stock of safety equipment. At the same time, the San Francisco factory will double its floor space to permit the installation of new machinery, needed to assure prompt shipment of the equipment demanded by the rapid development of mines and industry throughout the United States.

W. H. Burleson Appointed Manager Of O-B Power Utilities Department

Wade H. Burleson, formerly assistant manager of the Power Utilities Department of the Ohio Brass Company, Mansfield, Ohio, has been appointed manager of the department, succeeding M. M. Kenneally, resigned. In his new position, Mr. Burleson will supervise the sales of all types of O-B insulators, insulator fittings and hardware, and bushings. He has had nine years of operating experience and 15 years of service with O-B, during which he has visited almost every power utility in the United States and Canada.

New Line Air Compressors

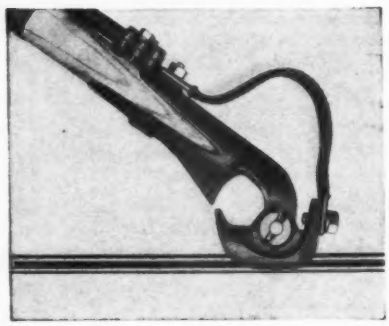
Ingersoll-Rand Company has announced a new line of fractional horsepower air compressors. These units are made in ¼ and ½ horsepower sizes. These units are very compact and neat in appearance. They have automatic start and stop control, are equipped with a new style seamless steel tank, and an improved check valve.

The ¼ and ½ horsepower units are available on a 2.4 cu. ft. tank. This unit is less than 35 inches high. The ½ horsepower size is also available on a 4.6 cu. ft. tank in either vertical or horizontal mounting. If desired the units

can be furnished less the tank. The units are finished in an attractive opalescent brown. Literature is available on request.

The Mosebach Electric and Supply Company, Pittsburgh, Pa., recently introduced a new Wobbler Type Bronze Slider which has certain advantages over trolley wheels when used on locomotives for main haulage.

The principal advantages are that the slider has more contact area against the trolley wire, it is exceptionally light in weight and because of its unusual flexibility, it will follow the trolley wire at all times regardless of irregularities or turns in the wire.



The pole head and harp is a single, rigid bronze casting. The alignment is taken care of by a swivel in the slider. The shoe is pivoted on a half-inch axle and is free to move from right to left at the slightest irregularities in the wire. This new slider contains no alignment springs and has fewer working parts than any other slider on the market.

Although this new product has been on the market but a few weeks it has met with instant approval of the mining industry.

Motorblowers

A new catalogue on Single-Stage, Type FS Motorblowers has just been issued by Ingersoll-Rand Co., 11 Broadway, New York City. This bulletin, form 2161-A, features an illustrated discussion of the theory of centrifugal air compression to pressures up to 3 pounds, and also contains an illustrated section covering the seven major fields of Motorblower applications.

Joins Link-Belt Stoker Division

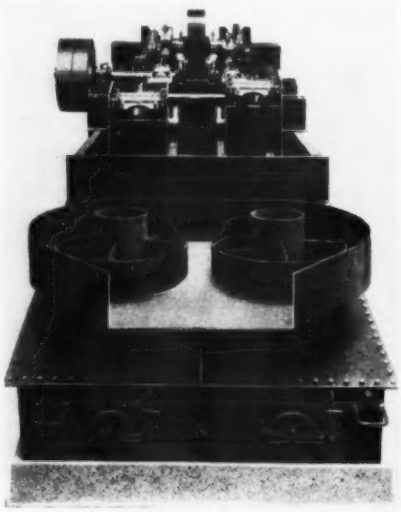
J. E. Martin, general manager of the stoker division of Link-belt Company, Chicago, announces the appointment of H. F. Brown to manage the sale of their electronic Radiostat control system for eliminating overheating and underheating, with corresponding savings in fuel. Mr. Brown is a graduate of the University of Illinois.

Suspended Magnets—Stearns Magnetic Mfg. Co., Milwaukee, Wis. New bulletin describing various types of safety suspended circular, rectangular, and hand magnets, together with illustrations, description, and application data.

The New Dorr Multizone Classifier

The Dorr Company, Inc., has introduced a new type of Dorr classifier, to be known as the Dorr multizone classifier, for better all-around classification at all separations up to and including 80 mesh. The distinctive feature of this new classifier is the utilization for the first time of a combination of turbulence, high pulp velocity, and quiescent overflow to obtain a cleaner sand product and a more readily controlled overflow. A test program of several years preceded the announcement of this new Dorr classifier, 30 of which have been quietly placed in commercial operation in the United States, Canada, South Africa, and Australia, to check results prior to public announcement.

This classifier differs radically in appearance from its long line of well-known predecessors. The lower or overflow end has been decked over and is surmounted by one or more circular overflow columns of variable cross sec-



tions. Feed is introduced near the middle of the machine and passes downward and under a vertical baffle and then along the underside of the deck to the base of the overflow columns. The raking mechanism remains the same. Sizes, too, remain the same.

The Dorr multizone classifier, as its name implies, provides several separate and distinct zones for controlling the separation of sands and slimes. Particular importance has been placed on the control of the so-called critical size particles, those difficult particles close to the mesh of separation that tend sometimes to become associated with the coarse sands and sometimes with the fine slimes.

The multizone classifier may be utilized either as additional grinding mill capacity or else as additional fineness, whichever is most attractive under the conditions prevailing at the property.

Koppers Awarded United Electric Contract

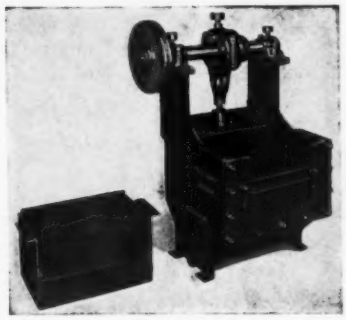
The Koppers Rheolaveur Company has been awarded a contract for the construction of a coal tipple and washing plant for the United Electric Coal Companies at Dunfermline, Ill. Construction will cost approximately $500,000. Work will start about July 1, and the plant will be in operation about October 1. The coal company will start a new stripping operation near Dunfermline on 1,500 acres of land containing about 15,000,000 tons of Illinois No. 5 coal.

The new plant will handle 4,500 tons of coal a day. It will be able to crush to past 12 inches and the 3 by 0 will be washed. The plus three will be hand picked in 12 by 6 and 6 by 3 sizes. All coal of plus 48 mesh will be cleaned and recovered. The 5/16 by 48 mesh will be mechanically dewatered by Carpenter centrifugal dryers, made exclusively by Koppers, and the ¾ by 5/16 will be heat dried. Coal will be loaded over seven tracks and the plant will have facilities to mix any sizes required. The United Electric Coal Companies are exclusively strip mine operators.

Improved Gold Jig

The Allis-Chalmers modification of the Woodbury jig is entering its third year of successful operation on gold ores throughout the world. Used in closed circuit with ball mill and classifier this high speed jig scalps out free gold and sulphide mineral as soon as unlocking occurs, making a high grade gold concentrate suitable for amalgamation or shipment. Recoveries as high as 95 per cent have been made in concentrates assayed in the thousands of dollars.

The unit is operated at short stroke and high speed so that high density ball mill discharge can be treated with little or no dilution water. Another feature



not found in other jigs is the removable tray arranged so that the entire jigbel can be removed to allow handling and clean-up with minimum loss of time. These jigs are furnished in two sizes, 12-in. by 12-in. and 18-in. by 24-in. The smaller unit handling 25 to 50 tons of new feed, and the larger 100 to 150 tons of new feed, in addition to circulating loads of as much as 400 per cent. Varipitch Texrope sheaves are supplied for speed variation.

H. M. Holkestad to Manage Bullard Salt Lake Office

H. M. Holkestad, until recently engaged as superintendent of one of the mines in the Grass Valley, Calif., region, announces that effective April 15 he will assume the managership of the Salt Lake City office of E. D. Bullard Company, manufacturers and distributors of "everything in safety." According to E. W. Bullard, president of E. D. Bullard Company, "Mr. Holkestad's extensive background of practical mining and construction work fits him to give our company splendid representation in the intermountain district. He understands the problems of the man on the job, through having been up against these same problems in his previous connections. We feel sure that he will be of great help to those organizations in his territory desiring to better their safety records." The new address of the Salt Lake City office is 14 Post Office Place.

The Louis Allis Co. has prepared a new Bulletin No. 512-D describing their new Splash-proof motor, which is a brand new introduction to the mining industry—and a comparatively new innovation in the electrical industry. Copies may be obtained by addressing their home office, Milwaukee, Wis., or any branch office.

New Offices

The San Francisco district office of the Carbon Sales Division of National Carbon Company, Inc., formerly located at 599 Eighth Street, has moved into newly established quarters in the Adam Grant Building. The new address for this office is now Room 524 Adam Grant Building, 114 Sansome Street, San Francisco, Calif. The following products manufactured by National Carbon Company are handled by this division of the company: Carbon brushes, welding carbon products, chemical carbon products, carbon and graphite specialties, graphite powders, lighting carbons, carbon arc lamps. This office is under the jurisdiction of Mr. E. C. Friday, district manager.

A Correction

The April issue of the MINING CONGRESS JOURNAL carried an announcement of a new stainless steel shovel made by the Ames-Baldwin-Wyoming Company, Parkersburg, W. Va. The address should have been North Easton, Mass.

Wade Instrument Co., 2246 Brooklyn Station, Cleveland, Ohio, announces a new folder: Drafting—A folder showing a new sketch pad set of tracing paper with a guide sheet with Isometric pattern on one side and ⅛-inch squares on the other; a new adjustable irregular curve; and other drawing instruments, blue print papers in sheets and tracing papers.

Lewis Foundry & Machine Company, a subsidiary of Blaw-Knox Company, has received a contract from Tennessee Coal, Iron and Railroad Company for two three-high roughing mills, complete with Lewis roller and catcher tables, for installation at their sheet mills at Fairfield, Ala.

Center-Guide Belt Conveyor Announced by Link-Belt

In step with the growing trend to use belt conveyors in underground coal and ore mines, for low-cost long-distance transportation of the mined product, Link-Belt Company, Chicago, announces that it has developed a center-guide belt conveyor which is particularly well suited for use in shallow seams, and on such uneven floor surfaces as are commonly encountered. Installations have been made in seams as low as 30 inches.

The new feature consists of a conveyor belt molded with a continuous central guide strip on the underside, and the use of anti-friction conveyor idlers having a central roll with a deep groove within which the guide strip is confined in both runs.

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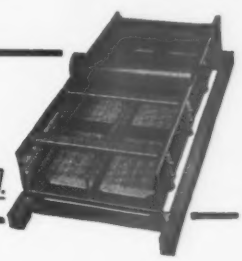

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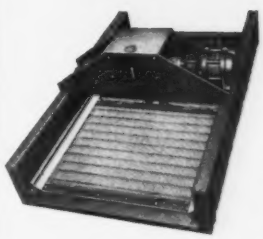
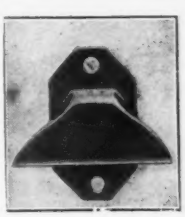


Diagonal-Deck Deister-Overstrom Coal-Washing Tables now offer greater production, finer cleaning, and lower operating cost than ever before has been possible as a direct result of streamlined performance in tune with modern trend.

The NEW LEAHY Heavy Duty Vibrating Screen is unequalled for wet or dry screening of coal from 3" down to the finest mesh. Excellent for dedusting. Equally valuable for dewatering.



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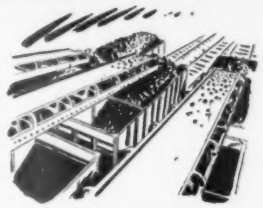

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Coal treated with Standard Vapor Oil enables you to outsell competitors. Sell the *cleanliness* of your product. Standard Vapor Oil costs but a few cents a ton applied, but the reduction in breakage and clean, dustless handling advantages bring *premium prices* for *your* product. Let a Standard Lubrication Engineer give you all the details on costs and sales features of oil-treated coal.

Other Standard Oil (Indiana) products for low cost lubrication include:

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It contains a brief discussion of the various types of mine locomotives, the important lubrication problems in each, and the recommended lubricants. This and the monographs listed below have been prepared by technically trained lubrication engineers to help you reduce your lubrication costs. Ask for the subjects that interest you. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago, Illinois.

"Mine Car Lubrication"
"Lubrication of Shovels and Draglines"
"Lubrication of Reciprocating Type Air Drills"
"Steam Engine Lubrication"
"How to Cut Coal Handling Costs (Stoker Lubrication)"

"Sure, you know Jack– *he's SAVED this company PLENTY!"*

"That's Jack, the Standard Lubrication Engineer—he's a real asset to this plant. We first met him the time we had so much trouble with the bearings on No. 2 engine. I'll never forget it. He looks like a white-collar guy—but you should have seen him that day. He was right in there every minute—and grease up to his ears. He sure pulled us out of a hole. He's been 'Jack' around here ever since—and just between us, he's meant 'jack' to this plant."

Multiply this opinion by hundreds, even thousands, and you will have an idea of the friendliness with which Standard Lubrication Engineers are received throughout their territory. And it's only natural. Standard Lubrication Engineers have a service to give you. A helpful service. Their one interest—to cut your lubrication costs . . . their sole reward, your satisfaction with the lubrication in your plant and the Standard Oil products you use.

Do you know *your* Standard Lubrication Engineer? By all means get acquainted; it will be profitable to you. Call your local Standard Oil (Indiana) office and ask for a Lubrication Engineer.

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STANDARD OIL COMPANY (INDIANA)

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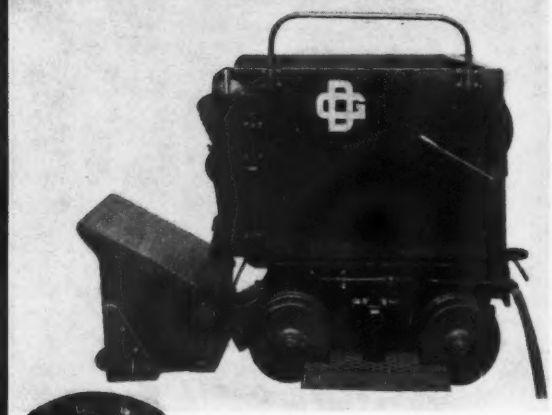
SPEED

THAT MAKES LOADING COSTS HIT BOTTOM!



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INDEX TO ADVERTISERS

	Page
Allis-Chalmers Mfg. Co.	19
American Cable Co.	Third Cover
Anaconda Wire & Cable Co.	32-33
Appalachian Coals, Inc.	102
Atlas Powder Co.	3
Bethlehem Steel Co.	8
Deister Concentrator Co.	109
duPont de Nemours Co., E. I., Inc.	24-25
Edison, Inc., Thos. A.	7
Electric Storage Battery Co., The	38
Enterprise Wheel & Car Corp.	37
Gardner-Denver Co.	112
General Electric Co.	35
Goodman Mfg. Co.	14-15
Hendrick Mfg. Co.	39
Hercules Powder Co.	28
Hoffman Bros. Drilling Co.	104
Jeffrey Mfg. Co.	11-12
Joy Mfg. Co.	20-21
Koppers Co.	9
American Hammered Piston Ring Division	
Bartlett Hayward Division	
Engineering & Construction Division	
Tar & Chemical Division	
Western Gas Division	
Koppers-Rheolaveur Co.	
The Maryland Drydock Co.	
The White Tar Co. of New Jersey, Inc.	
The Wood Preserving Corp.	
Lehigh Safety Shoe Co., Inc.	17
Link-Belt Co.	29
Loftus, Peter F.	104
Mine Safety Appliances Co.	Back Cover
New Departure	43
Ohio Brass Co.	22-23
Pennsylvania Drilling Co.	109
Pierce Management	104
Preformed Wire Rope	44
Pure Oil Co., The	16
Roberts & Schaefer Co.	5
Robins Conveying Belt Co.	10
Robinson Ventilating Co.	109
Roebling's Sons Co., John A.	27
Safety Mining Co.	42
SKF Industries, Inc.	34
Standard Oil Co. (Indiana)	111
Sullivan Machinery Co.	26, 30-31 and Front Cover
Timken Roller Bearing Co., The	6
United Engineers & Constructors, Inc.	36
Universal Vibrating Screen Co.	109
Western Cartridge Co.	18
Westinghouse Elec. & Mfg. Co.	40-41

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Call in a Hazard representative. Ask him about that really remarkable rope—Lay-Set Preformed Green Strand. He will tell you about it—and exactly where, and in what applications he knows it will give you much longer, safer, better service.

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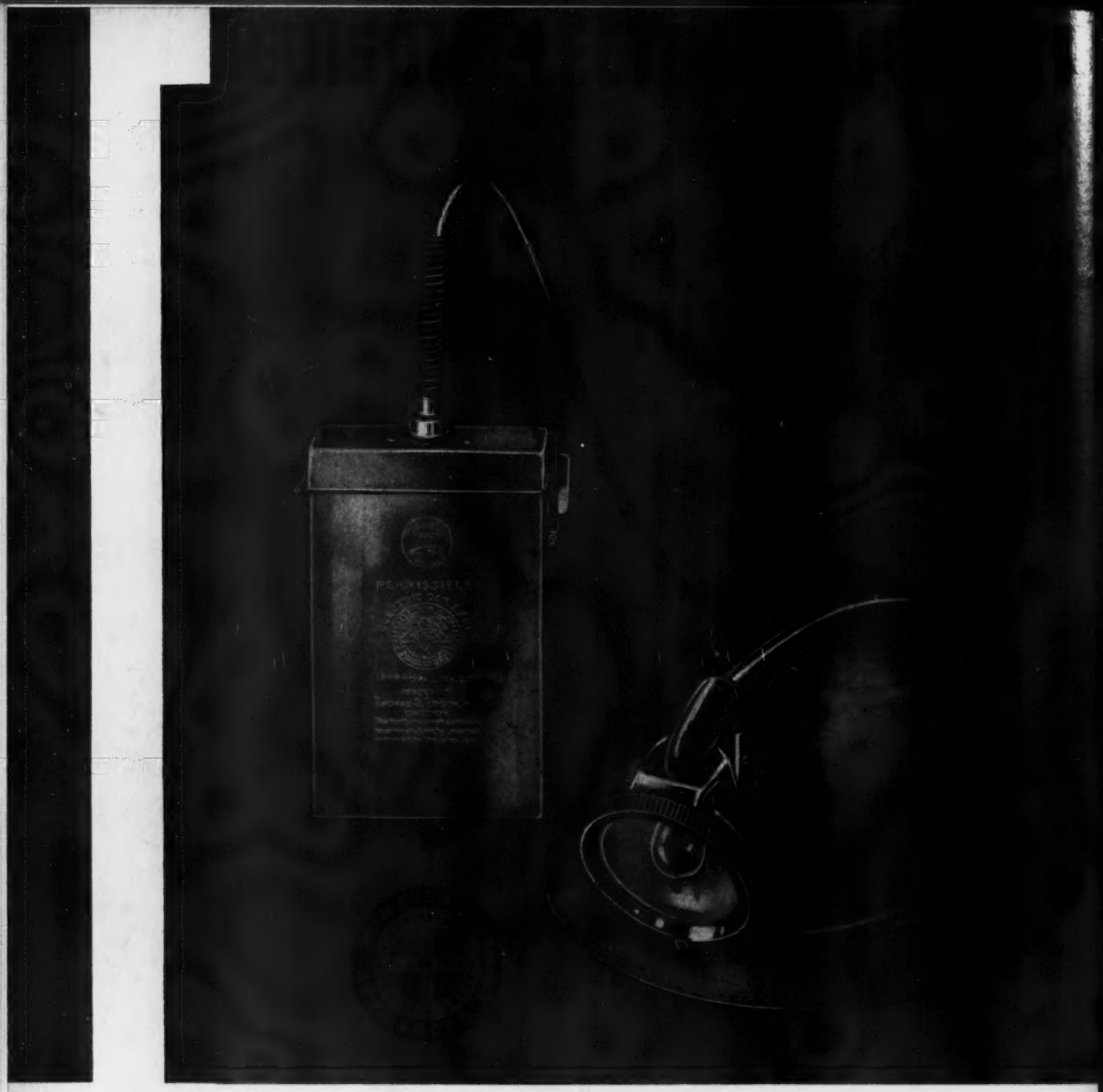

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